RECORDS

OF THE

BOTANICAL SURVEY OF INDIA

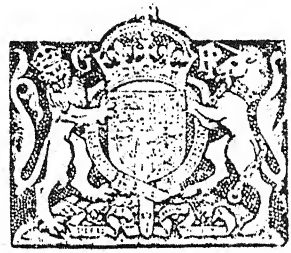
VOLUME XIII. NO. 1-2

A CENSUS OF INDIAN MOSSES

WITH

Analytical keys to the Genera referred to in the Census as well as all the Genera dealt with in the second edition of Prof. Brotherus' account of the Musci Veri in Engler and Prantl's "Pflanzenfamilien".

P. BRÜHL



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1982

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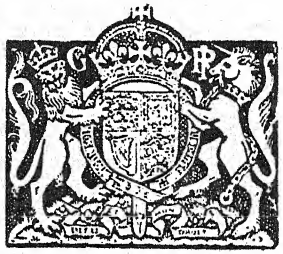

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A CENSUS OF INDIAN MOSSES

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Analytical keys to the Genera referred to in the Census as well as all the Genera dealt with in the second edition of Prof. Brotherus' account of the Musci Veri in Engler and Prantl's "Pflanzenfamilien".

I. INTRODUCTION.

IN 1922, the University of Calcutta, at my suggestion, acquired by purchase the moss herbarium of the Zoologisch-Botanische Gesellschaft of Vienna. When arranging the collection according to the system adopted by Prof. Brotherus in the first edition of Engler and Prantl's "Pflanzenfamilien" and bringing the nomenclature, otherwise authoritative, up to date, a task which was greatly facilitated by Limpricht's great work "Laubmoose Deutschlands, Oesterreichs und der Schweiz", I conceived the idea of preparing a list of all the species reported up to that date from the British possessions in Southern Asia, comprising the Indian Empire, Ceylon and the Malay Peninsula. At the very beginning the close vicinity of the Malay Peninsula to Sumatra and Java and the undoubted affinity of the moss flora of Ceylon to that of the Malay Archipelago induced me to include in my list all the species dealt with by Dr. Max Fleischer in his work "Die Musci der Flora von Buitenzorg (zugleich Laubmoss flora of Java)". There being, however, a fair prospect of a second edition of Engler and Prantl's "Pflanzenfamilien" being published within a comparably short period of time, I decided to refrain from publishing my list, which had been completed in 1923, until the second edition of Prof. Brotherus' account of the Musci Veri had appeared. This occurred in 1925. I then started to recast my list and to work out a key to the genera reported from the area taken into account in compiling the list of species. The inclusion of the species of mosses of the Indian Archipelago has been justified by H. N. Dixon's work on the mosses of the Malay Peninsula. In view of comparatively little being yet known of the moss flora of most parts of Burma, it appeared desirable to include in my list all the species recorded, chiefly by French bryologists, from the French possessions of the Farther Indian Peninsula. Recent discoveries made in the North-West Frontier Province and adjacent regions (*see* Dixon's account of the mosses collected

by Garrett and Lillie) render it very probable that species reported at present only from the Caucasus may yet be traced along the mountain ranges of Northern Persia and Afghanistan right into the North Western regions of India. In a similar manner species of Southern Persia and countries farther West may yet be found in Baluchistan. I decided, therefore, considerably to widen the area to which reference is made in my list and to include in it all the species recorded, as far as my information goes, from the Caucasus, Kurdistan, Turkistan, Persia, and some other parts west of India. The gaps in our knowledge of the moss flora of the Indian Empire are unfortunately yet numerous and extensive. We possess yet only a somewhat scanty acquaintance even with the moss flora of the Indo-Gangetic Plains; Rajputana, Central India, the Central Provinces, Chota Nagpur and Orissa, as also considerable tracts of the Bombay and Madras Presidencies. One of my aims when engaging in the work which has resulted in the production of the present volume was to stimulate research, as also to provide Indian students with the means of identifying at least the genera of mosses with which they may come in contact.

This volume is divided into the following parts :—

(1) a list of the species of mosses recorded up to the present time as occurring within the precincts of the Indian Empire, in Ceylon, the Malay Peninsula and all the surrounding regions with already known or reasonably expected affinities to the Indian moss flora; (2) and (3) notes on the collection, preservation and identification of mosses; (4) a key to the genera recorded from the whole of the area dealt with in list (1); (5) a list of the species incorporated in E. Levier's Indian exsiccata as far they are not mentioned in the second edition of Engler and Prantl's "Pflanzenfamilien" and, therefore, are not included in list (1); probably the majority of the *species novae* in Levier's collection have not yet been described; (6) a key to all the genera recognised by Prof. Brotherus in the Second edition of the "Pflanzenfamilien"; (7) remarks on the distribution of the Musci Veri within the Indian Empire, Ceylon and the Malay Peninsula.

Quite apart from the fact that a not inconsiderable number of moss species are habitually sterile, many tracts of country are usually visited only at times when sporogones have not yet made their appearance or when they have already been destroyed. Botanists whose teaching work compels them to remain in the Plains exactly at the best time for collecting complete specimens of mosses growing in hilly and mountainous regions are particularly handicapped. Moreover, plant collecting in the Tropics is not that comparatively simple, cheap and exhilerating

operation which it is in countries enjoying a temperate climate and ample travelling facilities. That at least partly accounts for the comparatively scanty assistance which one obtains from other people here in India. It is quite significant that a considerable part of our knowledge of the flora of less accessible tracts is due to the labours of missionaries and priests; I need only mention the names of Jaschke, Campbel., Pere Foreau and Father Blatter.

To make possible the determination of specimens devoid of sporogones I have based the main alternatives in the first of my keys on vegetative characters; the use of reproductive characters as alternatives could, of course, not be entirely avoided; the second key, on the other hand, makes more extensive use of reproductive characters. The two keys can, therefore, serve as useful complements. Generally, I have not referred in detail to the structure of the peristome, as information on this point is best obtained by referring to the descriptions and illustrations in the " Pflanzenfamilien ".

Of indispensable literature which must be at the disposal of anyone who wishes to be able to identify, at least approximately, Indian moss specimens I mention first and foremost Prof. Brotherus' account of the Musci in the second edition of Engler and Prantl's " Pflanzenfamilien " (vol. X and XI); further Dr. Max Fleischer's " Die Musci der Flora von Buitenzorg " (vols. I to IV); Gustav and W. Limpricht's " Die Laubmoose Deutschlands, Oesterreich und der Schweiz " (vols. I to III); Monkemeyer, " Die Laubmoose Europas " (*Leipzig 1927*); Mitten's publications in the Journal of the Linnean Society, especially his " Musci Indiae Orientalis " (*vol. III, 1859, Supplement to Botany, vol. I*); H. N. Dixon, " Merceyopsis, a new genus of mosses " (*Journal of Botany, vol. XLVIII, 1910*), " Report on the mosses of the Abor Expedition " and " Report on the mosses collected by Mr. C. E. C. Fischer and others from South India and Ceylon " (*Records of the Botanical Survey of India, Vol. VI, No. 3*); " On a collection of Bornean Mosses by the Rev. C. H. Binstead " (*Journal of the Linnean Society, Botany, Vol. XLIII, 1916*), "On a collection of mosses from the Kanara District " (*Journal of Indian Botany, Vol. II, 1921*), " Mosses collected in Gilgit, etc., by J. Garret and W. Lillie " (*Records of the Botanical Survey of India, Vol. IX, No. 5, 1926*); " A list of Mosses of the Malay Peninsula " (*The Garden's Bulletin, Straits Settlements, 1926*), H. N. Dixon et R. Potier de la Varde, " Contribution a la Flore bryologique de l'Inde meridionale " (*Archives de Botanique, Bull. Mens. No. 8-9, 1927*).

It is very unfortunate that no sets of E. Levier's collections of mosses in his Bryotheca exotica, Cent. I, his " Musci Indiae orientalis curante Gollan", and his collections of Sikkim, Bhotan and Tenasserim mosses are to be found in India. A list of the species represented in Levier's exsiccata and named by Brotherus and C. Muller, but not enumerated

in the second edition of the "Pflanzenfamilien" is given in part V. It must, however, be understood that the species represented in Levier's exsiccata but not yet described and fully characterised must be treated as "species ineditae". The species named by the late Professor Brotherus are probably all of them good species, but Mr. Dixon has already shown that a number of the species named by C. Muller as new are species already described or merely varieties of such species. As a matter of fact, the publication of Levier's exsiccata of Indian mosses has been to us here in India more a hindrance than a help in the working out of the Indian moss flora. I have, however, thought it advisable to publish the Levierian names so as to avoid using identical specific names by Indian bryologists when publishing newly discovered species, A number of new species has been published, especially Bornean species, since the completion, after revision in the earlier part of 1928, of my list. It is, therefore, proposed to publish a supplementary list at a later date, and I shall be very grateful for any copies of bryological literature referring to the area under review.

The analytical key to the genera has proved itself to be useful in the identification of genera by some of my students. It will at least render an approximate determination of the genus possible and is meant to be used in conjunction with Prof. Brotherus' account in the second edition of Engler and Prantl's "Pflanzenfamilien".

My thanks are due to Mr. C. C. Calder, Director of the Botanical Survey of India, for the publication of the present work in the Records of the Botanical Survey of India; to Mr. K. P. Biswas, Curator of the Herbarium of the Royal Botanic Gardens, Sibpur, for the loan of the moss specimens preserved in the Sibpur Herbarium and assistance in other directions; to Dr. Cowan, lately officiating Director of the Botanical Survey of India for having collections of mosses made in British India in relation to my work; to Mrs Colthurst of Kurseong for a collection of mosses from Kurseong and surroundings; to Dr. Winfield Dudgeon of the Ewing Christian College, Allahabad, for the loan of his collections of mosses from the upper Gangetic Plain and from Garhwal; to Research Scholar Nagendranath Sirkar for assistance in checking my list, testing my keys and making numerous careful microscopic preparations and drawings; to Professor V. F. Brotherus and to Messrs. Wilhelm Engelmann, the Publishers of Engler and Prantl's "Pflanzenfamilien" for permission to utilise the "Kiinstliche Schuissel zur Bestimmung der acrocarpoischen and pleurocarpischen Moose" in the first edition of the "Pflanzenfamilien" in the working out of my general key to the genera of Musci Veri; and last but not least to Mr. H. N. Dixon, M. A., F.L.S., of Northampton, for his encouragement and his ever ready assistance, as also for presenting me with copies of his publications. I am also greatly obliged to the Authorities of the British

Museum for supplying me, at the request of Mr. Dixon, with a typed copy of a list of the names of species, published and unpublished, contained in E. Levier's Indian exsiccata. I also desire to express in this place my appreciation of the great services rendered to Indian Bryology by the great French Bryologists Renauld, Cardot, Bescherelle, Henry and Potier de la Varde. Finally, I am under great obligation to Mrs. Ivy Woutersz, Headmistress of the European Orphanage, Bangalore, for entering and checking the page numbers in the Alphabetical List of Genera.

II. ALPHABETICAL LIST OF GENERA.

(The numbers in round brackets refer to the pages of volumes X and XI of Engler and Prantl's second edition of the "Pflanzenfamilien", the numbers at the margin to the pages of the present volume; the numbers in square brackets indicate pages in Part No. 2.)

III. LIST OF SPECIES REPORTED FROM THE INDIAN EMPIRE, CEYLON, THE MALAY PENINSULA, THE MALAY ARCHIPELAGO, SIAM, COCHIN CHINA, ANAM, TONKIN, FORMOSA, TURKESTAN, THE CAUCASUS, KURDISTAN, PERSIA AND AFGHANISTAN.

(*The page numbers refer to the first volume of Prof. Brotherus' account of the Mosses in the second edition of the "Pflanzanfamilien, the page numbers prefixed by II refer to the second volume of the same work; of the symbols prefixed to the names of species* * *indicates that the species has been reported from the Himalaya from Bhotan westwards,* † *that the species has been found in the Abor country, Assam and the Assam Hill Ranges and Burma,*‡ *that it occurs in the Indo-Gangetic Plains, the Indian Peninsula, Ceylon and the Malay Peninsula. For addenda to the List see page 135.*

Division: BRYOPHYTA.

Class: MUSCI.

Subclass: SPHAGNALES.

Family: **SPHAGNACEAE.**

Genus: **SPHAGNUM.**

1.*† **S. fimbriatum** Wilson. Cosmopolitan. p. 113.
2. **S. Girgensohnii** Russow. Asia, *Europe, N. Am.* p. 113.
3. **S. robustum** Röll. *Siberia, E. Asia, Europe, Greenland, N. Am.* p. 113.
4.* **S. acutifolium** Ehrhardt. Himalaya: Nepal, *Japan, Europe, N. Am.* p. 114.
5.† **S. acutifolioides** Warnstorf. Assam. p. 115.
6.* **S. Junghuhnianum** Dozy et Molkenboer. Himalaya, *Yünnan, Java, Celebes, Philippines, Formosa.* p. 115.
7. **S. plumulosum** Röll. *Yünnan, Japan, Azores, N. and S. Am.* p. 115.
8.‡ **S. ceylanicum** Mitten. Ceylon. p. 115.
9.* **S. teres** Ångström. Himalaya, *Caucasus, Siberia, Europe, N. Am.* p. 116.
10.*† **S. cuspidatulum** C. Müller. Sikkim, Khasia, Burma, Eastern Peninsula, *Celebes, Luzon.* p. 118.
11. **S. recurvum** Palisot. N. Asia, Japan, Caucasus, Europe, N. Am. p. 119.

12.† **S. Khasianum** Mitten. Khasia. p. 121.
13.* **S. ovatum** Hampe. Himalaya. p. 121.
14.† **S. papillosum** Lindberg. Burma, *Japan, Europe, N. Am., New Zealand.* p. 123.
15. S. palustre Lin. Nearly Cosmopolitan, Sikkim. p. 123.
16.* **S. pseudocymbifolium** C. Müller. Himalaya, *Formosa.* p. 123.
17.*† **S. Griffithianum** Warnstorf. India. p. 124.
18. **S. magellanicum** Bridel. *Asia, Europe, America.* p. 124.

Subclass: ANDREAEALES.

Family: **ANDREAEACEAE.**

Genus: **ANDREAEA.**

19.* **A. indica** Mitten. Sikkim. p. 129.
20.* **A. densifolia** Mitten. Sikkim. p. 129.
21.* **A. commutata** C. Müller. Sikkim. p. 130.
22.* **A. rigida** Wilson. Sikkim. p. 130.
23. **A. petrophila** Ehrhardt. *Caucasus, Europe, N. Am., New Zealand, Tasmania.* p. 129.

Subclass: BRYALES.

Series Group: EUBRYINALES.

Series: FISSIDENTALES.

Family: **FISSIDENTACEAE.**

Genus: **FISSIDENS.**

24. **F. bogoriensis** Fleischer. *Java.* p. 145.
F. brachyneuron Brotherus et Fleischer. S. India, Java. p. 145.
25. **F. subbrachyneuron** Thériot et Varde. *Annam.* II p. 524.
26. **F. subbrachymenium** Thériot et Varde. *Annam.* p. 145.
27. **F. splachnobryoides** Brotherus. W. Ghats, *Java.* p. 146.
28.*†‡**F. bryoides** (Lin.) Hedwig. Himalayas, Khasia, W. Ghats, Bengal ?, *Caucasus, Siberia, Alps, N. Am.* p. 146.
29.† **F. longisetus** Griffith. Assam. p. 146.
30.* **F. subpalmatus** C. Müller. Sikkim, Terai, Garhwal. p. 146.
31.*‡ **F. Schmidii** C. Müller. Sikkim, Nilgiris, Ceylon. p. 146.
32.‡ **F. curgensis** Brotherus. W. Ghats. p. 146.
33.‡ **F. nanocarpus** C. Müller. Ceylon. p. 146.
34.‡ **F. Beckettii** C. Müller. Ceylon. p. 146.

35.‡ **F. biformis** Mitten. Ceylon. p. 146.
36.‡ **F. aberrans** Brotherus et Dixon. Palni and Tirumalai Hills, Ceylon. p. 146.
37. **F. xiphioides** Fleischer. *Java.* p. 146.
38.‡ **F. Zollingeri** Montagne. Kanara, Andamans, *Sumatra, Java, Tahiti.* p. 146.
39. **F. persicus** Juratzka. *Persia.* p. 146.
40. **F. Geppii** Fleischer. *Java.* p. 147.
41.* **F. crenulatus** Mitten. Nepal. p. 148.
42.‡ **F. titalayanus** C. Müller. Bengal. p. 148.
43.‡ **F. Kurzii** C. Müller. Bengal. p. 148.
44.‡ **F. elimbatus,** *var. of F. Walkeri* Brotherus. Kanara. p. 148.
45.‡ **F. Walkeri** Brotherus. Kanara. p. 148.
46.‡ **F.** subfirmus Dixon. Karwa. p. 148.
47.‡ **F. karwarensis** Dixon. Karwa. p. 148.
48.‡ **F. socialis** C. Müller. Ceylon. p. 148.
49.‡ **F. minutus** Thwaites et Mitten. Ceylon. p. 148.
50.‡ **F. pennatulus** Thwaites et Mitten. S. India. Ceylon. p. 148.
51.‡ **F. virens** Thwaites et Mitten. Ceylon. p. 148.
52.‡ **F. axilliflorus** Thwaites et Mitten. Ceylon. p. 148.
53.‡ **F. speluncae** Brotherus. Ceylon. p. 148.
54.‡ **F. Thwaitesii** Paris. Ceylon. p. 148.
55.‡ **F. perpusillus** Wilson. Ceylon. p. 148.
56.‡ **F. multiflorus** Thwaites et Mitten. Ceylon. p. 148.
57.‡ **F. plumula** Thwaites et Mitten. Ceylon. p. 148.
58.‡ **F. Glasenhageni** Brotherus. Ceylon. p. 148.
59.‡ **F. firmus** Mitten. Ceylon. p. 148.
60. **F. siamensis** Brotherus. *Siam.* p. 148.
61. **F. papillulosus** Brotherus. *Siam.* p. 148.
62. **F. agestus** Bescherelle. *Tonkin.* p. 148.
63. **F. faniensis** (Bescherelle) Paris. *Tonkin.* p. 148.
64. **F. dongensis** Bescherelle. *Tonkin.* p. 148.
65. **F. tapes** Paris et Brotherus. *Tonkin.* p. 148.
66. **F. Gaulthieri** Paris et Brotherus. *Tonkin.* p. 148.
67.*‡ **F. ceylonensis** Dozy et Molkenboer. Simla, Sikkim, Nilgiris, Ceylon, Malacca, *Sumatra, Java, Borneo.* p. 148.
68. **F. Treubii** Fleischer. *Java.* p. 148.
69. **F. Wichurae** Brotherus et Fleischer. *Java.* p. 148.
70. **F. Hollianus** Dozy et Molkenboer. *Java.* p. 148.
71. **F. edamensis** Fleischer. *Java.* p. 148.
72. **F. autoicus** Thériot et Dixon. *Borneo.* p. 148.
73. **F. asperisetus** Lacoste. *Celebes.* p. 148.
74. **F. incertus** Thériot et Varde. *Tonkin, Annam.* II p. 524.
75.* **F. perplexans** Dixon. Hazara.

76.*†‡ **F. diversifolius** Mitten. Bhotan, Abor, Bihar, S. India, W. Ghats. p. 149.
77.‡ **F. Mittenii** Paris. Ceylon, *Siam*. p. 149.
78.‡ **F. immutatus** Dixon. Kanara, Mangalor. p. 149.
79.‡ **F. flabellatus** Thwaites et Mitten. Ceylon. p. 149.
80. **F. crassinervis** Lacoste. *Banca*. p. 149.
81. **F. subdiscolor** Dixon. Malacca. II p. 524.
82.*† **F. pulchellus** Mitten. Sikkim, Abor. p. 150.
83.‡ **F. Wilsoni** Montagne. Nilgiris. p. 150.
84.‡ **F. fuscoviridis** Thwaites et Mitten. W. Ghats, Ceylon. p. 150.
85.‡ **F. anthrophyi** C. Müller. Ceylon. p. 150.
86. **F. Braunii** (C. Müller) Dozy et Molkenboer. *Java*. p. 150.
87. **F. serratus** C. Müller. *Java*. p. 150.
88. **F. papillosus** Lacoste. *Java*. p. 150.
89. **F. punctulatus** Lacoste. *Saparoca*. p. 150.
90.* **F. involutus** Wilson. Sikkim. p. 151.
91.‡ **F. terricola** C. Müller. Bengal. p. 151.
92.† **F. circinalis** Mitten. Upper Burma. p. 151.
93.‡ **F. lutescens** Brotherus. Mangalor, W. Ghats. p. 151.
94.‡ **F. excedens.** Brotherus. Palni Hills, W. Ghats. p. 151.
95.‡ **F. macrosporus** Dixon. Kanara. p. 151.
96.‡ **F. subobscurus** Paris. Ceylon. p. 151.
97. **F. subangustus** Fleischer. *Sumatra, Java*. p. 151.
98.†‡ **F. Zippelianus** Bryol, jav. Burma, Kanara, Palnis, Sirumalais, Travancore, Ceylon, *Sumatra, Java, Tonkin*. p. 151.
99. **F. Sakourae** Paris et Brotherus. *Formosa, Japan*. p. 151.
100.‡ **F. angustus** Thwaites et Mitten. Ceylon. p. 151.
101. **F. tonkinensis** Paris et Brotherus. *Tonkin*. p. 151.
102.‡ **F. amblyotis** Dixon. Malacca. II p. 524.
103.‡ **F.** asplenioides (Swarts) Hedwig, S. India, *Indian Archipelago, Austr. C. and S. Am., Madeira, Canary Isl.* p. 151.
104.*†‡**F. nobilis** Griffith. Nepal, Sikkim, Abor, Khasia, Burma, Ceylon, *Java, Hongkong*. p. 152.
105.† **F. acutifolius** Mitten. Upper Assam. p. 152.
106.† **F. cristatus** Wilson. Khasia, *Java, Japan, Sakhalin, Caucasus, Europe, N. Am.* p. 152.
107.*†‡**F. anomalus** Montagne. India from Sikkim and Khasia to Madras and Ceylon, *Siam, Java*. p. 152.
108. **F. silvaticus** Griffith. Kumaon, Sikkim, Khasia, S. India, *Siam, Java*. p. 152.
109.† **F. jungermannioides** Griffith. Khasia. p. 152.
110. **F. taxifolius** (Lin.) Hedwig. *Persia, Caucasus, Alps, N. Am.* p. 152.
111.*† **F. areolatus** Griffith. Sikkim, Khasia, Burma. p. 152.

112.† **F. elongatus** Mitten. Khasia. p. 152.
113.*† **F. obscurus** Mitten. United Provinces, Khasia. p. 152.
114.‡ **F. discolor** Wilson. Ceylon. p. 152.
115.‡ **F. gedehensis** Fleischer. Ceylon, *Java*. p. 152.
116. **F. Teysmanianus** Dozy et. Molkenboer. *Java, Banca, Borneo*. p. 152.
117. **F. nigroviridis** Salm. *Borneo*. p. 152.
118. **F. geminiflorus** Dozy et Molkenboer. *Sumatra, Java*. p. 152.
119.* **F. grandifrons** Bridel. Garhwal, Hazara, Gilgit, *C. Asia, Europe, N. Am.* p. 153.
120.* **F. subgrandifrons** C. Müller. Tibet, N. N. Himalaya. p. 153.
121. **F. yunnanensis** Bescherelle. *Yünnan*. p. 153.
122.‡ **F. Sedgwickii** Brotherus et Dixon. Kanara. p. 153.
123.‡ **F. curvatoxiphioides** Dixon et Varde. Palni Hills.
124.‡ **F. microdictyon** Dixon et Varde. Palni Hills.
125.‡ **F. perumalensis** Dixon et Varde. Palni Hills.
126.‡ **F. angustiusculus** Dixon et Varde. Palni Hills.

Series : DICRANALES.

Subseries : DICRANINEAE.

Family : **ARCHIDIACEAE.**

Genus : **ARCHIDIUM.**

127.† **A. indicum** Hampe et C. Müller. Burma. p. 155.
128.‡† **A. birmanicum** Mitten. Kanara, Lower Burma (Moulmein). p. 155.
129.‡ **A. microthecium** Dixon et Varde. Palnis.
129*a*‡. **A. sp.** Central Provinces. Dixon in Kanara Mosses.

Family : **DITRICHACEAE.**

Genus : **PLEURIDIUM.**

130. **P. atternifolium** (Dickson) Rabenhorst. Caucasus, Europe, N. Am. p. 157.
131.* **P. tenue** (Wilson) Mitten. Sikkim. p. 157.
132.‡ **P. denticulatum** (C. Müller) Mitten. Nilgiris. p. 157.

Genus : **GARCKEA.**

133.*†‡ **G. phascoides** (Hooker) C. Müller. Nepal, Bhotan, Khasia, Burma, S. India, *Tonkin*. II. p. 158.
134.‡ **G. abbreviata** Dixon et Varde. Mangalor.

Genus : **DITRICHUM.**

135.* **D. tortile** (Schrader) Lindberg. Himalaya, Nepal, Sikkim, *Caucasus, Siberia, Amur, Europe, N. Am.* p. 162.

136. **D. javense** Fleischer. *Java.* p. 162.

137.*‡ **D. tortipes** (Mitten) Paris. Sikkim, S. India. p. 162.

138.* **D. laxissimum** (Mitten) Paris. Sikkim. p. 162.

139. **D. pallidum** (Schrader) Hampe. *Caucasus, Japan, Europe, N. Am.* p. 162.

140.‡ **D. flexifolium** (Hooker) Hampe. S. India, *Java, Borneo, Philippines, Australia, S. and E. Afr.* p. 162.

141.‡ **D. amoenum** (Thwaites et Mitten) Paris. Palnis, Ceylon, *S. Africa.* p. 162.

142.* **D. Duthiei** Brotherus. Garhwal.

Genus : **SAELANIA.**

143.* **S. glaucescens** (Hedwig) Brotherus. Kashmir, *Turkestan, Caucasus, N. and E. Asia, Hawaii, New Zealand, S. Africa.*

Genus : **CERATODON.**

144.*†‡C. **purpureus** (Lin.) Bridel. Kashmir, N. W. Himalaya, S. India, *Cosmopolitan.* p. 163.

145.*‡†C. **stenocarpus** Bryol. eur. N. W. Himalaya, Tropical Asia, *Trop. Afr., S. Europe, Mexico to Bolivia.* p. 163.

Genus : **CHEILOTELA.**

146. **Ch. longirostris** Fleischer. *Java.* p. 164.

Genus : **DISTICHIUM.**

147.*† **D. capillaceum** Bryol. eur. Gilgit, Kashmir, Tibet, Nepal, Sikkim, *Cosmopolitan.* p. 164.

148.* **D. inclinatum** (Ehrhardt) Bryol. eur. Tibet, Sikkim, *Caucasus, C. and N. Asia, Europe, N. Am.* p. 167.

Family : **SELIGERACEAE.**

Genus : **SELIGERA.**

149. **S. setacea** (Wulfsberg) Lindberg. *Caucasus, Europe, N. Am.* p. 168.

150. **S. tristicha** (Bridel) Bryol. eur. *Caucasus, Siberia, Europe, N. Am.* p. 169.

151. **S. pusilla** (Ehrhardt) Bryol. eur. *Caucasus Siberia, Europe, N. Am.* p. 169.

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152. **B. acuta** (Hudson) Bryol. eur. *C. Asia, Caucasus, Europe, N. Am.* p. 171.
153. **B. seligeroides** Lindberg. *Caucasus.* p. 171.

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154. **T. Schmidii** C. Müller. Nilgiris, Palnis. p. 175.
155.‡ **T. brevisetus** Dixon. Ceylon. p. 175.
156.† **T. assamensis** Brotherus. Assam. p. 176.
157. **T. tonkinensis** Bescherelle. *Tonkin.* p. 176.
158. **T. paucifolius** C. Müller. *Java, Luzon,* p. 176.
159.* **T. capillifolius** C. Müller. N. W. Himalaya. p. 176.
160.* **T. megapophysatus** C. Müller. Sikkim. p. 176.
161.* **T. Hookeri** C. Müller. Sikkim. p. 176.
162.*‡† **T. ceylonensis** C. Müller. Sikkim, Ceylon. p. 176.
163.*†‡ **T. conformis** Mitten. Nepal, Sikkim. Abor, S. India, *Tonkin.* p. 176.
164. **T. brevicollis** Hornschuch. *C. Asia, Europe, Greenland.* p. 176.
165.*† **T. sabulosus** Griffith. Bhotan. Assam. p. 176.
166. **T. drepanellus** Bescherelle. *Formosa, Philippines, Japan.* p. 176.
167. **T. microthecius** Bescherelle. *Tonkin.* p. 176.

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168.‡ **W. pellucida** (Wilson) C. Müller. Ceylon, *Java.* p. 176.
169. **W. bornensis** Brotherus. *Borneo.* p. 176.
170.† **W. Hampeana** (C. Müller) Salmon, Burma. p. 176.
171. **W. tonkinensis** Bescherelle. *Tonkin, Borneo.* p. 176.

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172. **A. squarrosum** (Stark) Lindberg. *Caucasus, Japan, N. Am.* p. 177.
173.* **A. patulum** (Mitten) Brotherus Sikkim. II p. 525.
174.* **A. molliculum** (Mitten) Brotherus. Sikkim. p. 177.
175.* **A. spirale** (Mitten) Brotherus. Himalaya. p. 177.
176. **A. crispum** (Hedwig) Lindberg. *Caucasus, Siberia, N. and C. Europe, N. Am.* p. 178.
177. **A. Grevilleanum** (Bryol. eur.) Lindberg. *Caucasus, Siberia, Europe, N. Am.* p. 178.
178. **A. rufescens** (Dickson) Lindberg. *Caucasus, Japan, Europe, N. Am.* p. 178.

179.* **A. rubra** (Hudson) Lindberg. Himalaya, *Caucasus, W. Asia, Siberia, Japan, Europe, N. Am.* p. 178.
180. **A. javanicum** Brotherus. *Java.* p. 178.
181. **A. Wichurae** Brotherus. *Java.* p. 178.

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182. **A. longipes** (Sommerfeld) Bryol. eur. *Alps, Findland, Norway, N. Am.* p. 179.
183.* **A. orientalis** Mitten. Sikkim, Bhotan. p. 179.

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184. **A. julacea** (Dozy et Molkenboer) Fleischer. *Java.* p. 180.

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185.‡ **M. edentatus** (Mitten) Fleischer. Ceylon. p. 181.
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186*a*. **M. annamensis** Paris. *Annam.* p. 181.
187.‡ **M. subangulatus** (Thwaites et Mitten) Brotherus. Ceylon. p. 181.
188. **M. Miquelianus** (Montagne) Besc. erelle. *Java, Banca, Borneo.* p. 181.
189. **M. macromorphus** Fleischer. *Java Borneo.* p. 181.
190. **M. torrentium** (Thériote et Varde) B. ·itherus. *Annam.* p. 181.
191.‡ **M. infuscatus** (Thwaites et Mitten, Paris. Ceylon. p. 181.
192.‡ **M. denticulatus** (Cardot et Varde) Brotherus. S. India. II p. 525.
193.‡ **M. flaccidulus** (Mitten) Bescherelle. Ce. lon. p. 181.
194.‡ **M. Schmidii** (C. Müller) Fleischer. Nilgiris, Singapur. p. 181.
195. **M. sinensis** Herzog. *Yünnan.* II p. 525.

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196.* **D. heteromalla** (Lin.) Schimper. Garhwal, Sikkim, Cosmopolitan. p. 182.
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198. **D. Moutieri** Brotherus et Paris. *Tonkin.* p. 182.
199.‡† **D. coarctata** (C. Müller) Bryol. jav. Ceylon, Burma, *Tonkin, Java, Philippines, Formosa.* p. 182.
200. **D. eustegia** Bescherelle. *Tonkin.* p. 182.
201.* **D. amplexans** (Mitten) Jaeger. Nepal. p. 182.
202.*† **D. setifera** (Mitten) Jaeger. Sikkim, Assam, *Philippines.* p. 182.

203. **D. tenuifolia** (C. Müller) Fleischer *Java.* p. 182.
205.‡ **D. edentata** Thwaites et Mitten. Ceylon.
206.‡ **D. stricticaulis** Cardot et Varde S. India. II p. 525.

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207.* **C. phasioides** (C. Müller) Paris. Nilgiris. p. 183.
208. **C. euphorocladum** (C. Müller) Bescherelle. *Indian Archipelago, Pacific Islands, E. Africa.* p. 183.
209.*† **C. Griffithii** Mitten. N. W. Himalaya, Sikkim, Khasia. p. 183
210.†‡ **C. Khasianum** (Griffith) Paris. Khasia, S. India, Ceylon p. 183.

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211.*‡ **M. subnanus** (C. Müller) Brotherus. S. India. Ceylon *Java.* p. 183.

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212.* **C. tenella** Cardot. Sikkim. p. 183.

Genus : **CAMPYLOPUS.**

213. **C. Schimperi** Milde. *Caucasus, Europe, N. Am.* p. 185.
214.* **C. Milleri** Renauld et Cardot. Sikkim. p. 185.
215.* **C. gracilis** (Mitten) Jaeger. N. W. Himalaya, Sikkim. p. 185.
216.* **C. subgracilis** Renauld et Cardot. Sikkim, Burma. p. 185.
217.‡ **C. pseudogracilis** Cardot et Dixon. Ceylon. p 185.
218.‡ **C. Zollingerianus** (C. Müller) Bryol. jav. Ceylon, *Java, Sumbawa.* p. 185.
219. **C. sericeus** Fleischer. *Java.* p. 185.
220.‡ **C. albescens** (C. Müller) Paris. India. p. 185.
221.* **C. Goughii** (Mitten) Brotherus. N. W. Himalaya, S. India, Ceylon. p. 183.
222.‡ **C. nilgiriensis** (Mitten) Jaeger. S. India, Ceylon. p. 185.
223.* **C. subtricolor** Lorentz. Ceylon. (*Dixon in Ceylon Mosses.*)
224.‡ **C. comosus** (Hornschuch' et Reinwaldt) Bryol. jav. S. India, Ceylon, *Tonkin, Java, New Guinea, S. Am.* p. 186.
225.‡ **C. reduncus** (Hornschuch' et Reinwaldt) Bryol. jav. Ceylon, *Java.* p. 186.
226.*†‡**C. ericoides** (Griffith) Jaeger. Nepal, Khasia, Ceylon, *Java.* p. 186.
227. **C. japonicus** Brotherus. *Formosa, Japan, Korea.* p. 186
228‡. **C. Ebehardtii** Paris et Brotherus. *Tonkin.* p. 186

229.‡ **C. Herzogii** Brotherus. Ceylon. p. 186.
230.‡ **C. recurvus** (Mitten) Jaeger. Nilgiris, Ceylon. p. 186.
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232.‡ **C. Nietneri** (C. Müller) Jaeger. Nilgiris. p. 187.
233.‡ **C. Schmidii** (C. Müller) Jaeger. Nilgiris. p. 187.
234.‡ **C. Sedgwickii** Dixon. W. India. p. 187.
235.‡ **C. aureus** Bryol. jav. Ceylon, Nicobars, *Java, Celebes, New Guinea*. p. 187.
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240.*†‡**C. lactus** (Mitten) Jaeger. Nepal, Khasia. W. Ghats, Madura, Palnis. p. 188.
241.‡ **C. caudatus** (C. Müller) Bryol. Jav. Nilgiris, Ceylon, *Java*. p. 188.
242.‡ **C. Walkeri** (Mitten) Jaeger. Ceylon. p. 188.
243.‡ **C. subulifolius** Thwaites et Mitten. Ceylon. p. 188.
244.*‡ **C. subfragilis** Renauld et Cardot. Sikkim, S. India. II p. 525.
245. **C. Domangei** Thériot et Varde. *Tonkin*. II p. 525.
245*a*. **C. pinangensis** Thériot. *Tonkin*.
246. **C. Andreanus** Cardot et Varde. S. India. II p. 525.
247.* **C. Roinei** Cardot et Varde. S. India. II p. 526.
248.* **C. erythrognaphalus** (C. Müller) Jaeger. S. India.
248*a*. **C. flagelliferus** (C. Müller) Jaeger Palnis.
248*b*. **C. introflaxus** (Hedwig) Mitten. *W. Afr. Isl., S. Am., Austr., New Zealand*, S. India.
248*c*. **C. reconditus** Thwaites et Mitten. S. India, Ceylon.

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250.‡ **Th. pterotoneurum** (C. Müller) Brotherus. Ceylon. p. 189.
251.‡ **Th. involutum** (C. Müller) Brotherus. Nilgiris. p. 189.
252.‡ **Th. leioneurum** (Thériot) Brotherus. S. India. p. 189.
253.‡ **Th. Thwaitesii** (Mitten) Brotherus. Ceylon. p. 189.
254.‡ **Th. exasperatum** (Bridol) Hornschuch et Reinwald. Ceylon, *Java, Borneo; Clebes, Hawaii*. p. 189.
255.‡ **Th. Blumei** (Dozy et Molkenboer) Brotherus. S. India, Ceylon, *Sumatra to Celebes, Borneo, Philippines, Japan, Tahiti*. p. 189.
256.*†‡**Th. nigrescens** (Mitten) Brotherus. N. W. Himalaya, Sikkim, Burma, S. India, Ceylon. p. 189.
257.‡ **Th. Depallieri** Cardot. S. India. p. 189.

258. **Th. tenuinerve** (Fleischer) Brotherus. *Java.* p. 189.
259.‡ **Th. abbreviatum** Dixon. Malacca. II p. 526.
260.‡ **Th. Ridleyi** Dixon. Malacca. II p. 526.

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261. **D. denudatum** (Bridel) Hagen. *Caucasus, Siberia, Japan, Europe, N. Am.* p. 190.
262.* **D. attenuatum** Wilson. N. W. Himalaya, Sikkim. p. 190.
263.*† **D. decipiens** Mitten. Sikkim, Khasia. p. 190.
264.‡ **D. sparsum** Dixon. Ceylon. p. 190.
265.* **D. asperulum** (Mitten) Brotherus. Sikkim, *C. and N. Europe, N. Am.* p. 190.
266. **D. nitidum** (Bryol. jav.) Fleischer. *Java, Borneo, Celebes.* p. 190.
267. **D. Forbesii** Brotherus. *Java.* p. 190.
268.*†‡ **D. uncinatum** (Harvey) Jaeger. Nepal, Sikkim, Khasia, *Java, Moluccas, Philippines.* p. 190.
269.* **D. caespitosum** (Mitten) Paris. Garhwal, Sikkim. p. 190.
270.*† **D. didymodon** (Griffith) Paris. Bhotan, Khasia. p. 190.
271.* **D. didictyon** (Mitten) Jaeger. Sikkim, Bhotan. p. 190.
272.* **D. dimorphum** Mitten. Sikkim, Bhotan. p. 190.
273. **D. Tenii** Brotherus et Herzog. *Yünnan.* II p. 526.
274.‡ **D. perviride** Dixon et Varde. S. India.

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275. **P. longifolium** (Ehrhardt) Loeske. *Caucasus, Siberia, N. Am.* p. 191.
276. **P. Sauteri** (Schimper) Loeske. *Caucasus, Siberia, Europe, N. Am.* p 191.
277.* **P. enerve** Loeske. Sikkim, *Caucasus, Europe, N. Am.* p. 191.

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278.*‡ **B. Leana** (Sullivant) C. Müller. Himalaya, Garhwal, S. India, Yünnan, *Manchuria, Japan, N. Am.* p. 192.

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279.* **A. lapponicum** (Hedwig) Schimper. N. W. Himalaya, *C. Asia Caucasus, Siberia, Japan, Spitzbergen, Europe, N. Am.* p. 193.
280. **A. Mougeotii** (Bryol. eur.) Schimper. *Caucasus, Europe, N. Am.* p. 194.

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281. **Rh. striata** (Schrader) Kindberg. *Japan, Europe, N. Am.* p. 194.

282.* **Rh. crenulata** (Mitten) Paris. Sikkim, *Europe.* p. 194.

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283.* **O. Martiana** (Hoppe et Hornschuch) Bridel. Sikkim, *Caucasus, Alps, Japan.* p. 196

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284. **C. tenellum** (Bryol. eur.) Limpricht. *Caucasus, Europe, N. Am.* p. 197.

285. **C. fallax** Limpricht. *Altai, Europe.* p. 197.

286. **C. polycarpum** (Ehrhardt) Schimper. *Caucasus, Europe, N. Am.* p. 197.

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287.*‡ **O. laxifolia** (Hooker) Paris. N. W. Himalaya, Kumaon, Sikkim, W. Ghats, Nilgiris, *Yünnan.* p. 198.

Genus: **DICHODONTIUM.**

288. **D. pellucidum** (Lin.) Schimper. *Caucasus, Japan, Alpine regions of Europe, N. Am.* p. 198.

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289.* **D. cirrata** (Lin) Lindberg. Kashmir, *C. Asia, Caucasus, Europe, Algier, N. Am.* p. 198.

290.* **D. alpina** (Mitten) Paris. Sikkim. p. 198.

291.* **D. indica** (Wilson) Paris. Sikkim. p. 198.

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292. **O. Wahlenbergii** Bridel. N. W. Himalaya, N. E. Asia, Europe. I p. 200.

293.‡ **O. decumbens** (Thwaites et Mitten) Brotherus. Ceylon. p. 200.

294.* **O. gracillimus** Dixon. Kashmir.

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295.*† **S. Reinwardti** (Dozy et Molkenboer) Bryol jav. Sikkim, Burma, *Java, Borneo.* p. 201.

296.* S. helicophylla Montagne. N. W. Himalaya, Sikkim, Mexico, C. Am. p. 201.

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297. **H. javanicum** Dozy et Molkenboer *Java.* p. 201.
298. **H. vaginatum** (Hooker). Bridel. *Java, Philippines, New Caledonia, Tahiti.* p. 201.
299.*†‡**H. Griffithianum** Mitten. Bhotan, Assam, Khasia, S. India, *Formosa.* p. 201.

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300. **O.** montanum (Hedwig) Loeske. *Caucasus, Siberia, Europe, N. Am.* p. 203.
301. **O.** flagellare (Hedwig) Loeske. *Caucasus, Siberia, Japan, Europe, Canary Isls., N. Am.* p. 204.

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302. **D. viride** (Sullivant et Lesguereux) Lindberg. *Caucasus, Europe N. Am.* p. 206.
303. **D. spadiceum** Zetterstedt. *Higher alpine regions from C. Asia to Pyrenees, Siberia, N. Am.* p. 206.
304. **D. fuscescens** Turner. *Caucasus, Siberia, Europe, N. Am.* p. 206.
305.* **D. crispifolium** C. Müller. Sikkim, *Yünnan.* p. 206.
306.* **D. spurium** Hedwig. Sikkim, *Siberia, Europe, N. Am.* p. 206.
307.* **D. Bergeri** Blandow. Sikkim, *Siberia, Europe, N Am.* p. 206.
308.* **D. Bonjeani** De Notaris. W. Himalaya, *Caucasus, Siberia, Europe, N. Am.* p. 207.
309. **D. scoparium** (Lin.) Hedwig. *C. and N. Asia, Japan, Europe.* p. 207.
310.* **D. lorifolium** Mitten. Kashmir, Nepal. p. 207.
311.* **D. kashmirense** Brotherus. Kashmir, N. W. Himalaya. p. 207.
312. **D. Delavayi** Bescherelle. *Yünnan.* p. 207.
313.* **D. undulatum** Ehrhart. W. Himalaya, *Caucasus, Siberia, Europe, N. Am.* p. 207.
314. **D. majus** Smith. *Caucasus, Siberia, Europe, N. Am.* p. 207.
315.* **D. gymnostomum** Mitten. Sikkim, *Yünnan.* p. 207.
316.* **D. himalayanum** Mitten. Kumaon, Sikkim. p. 207.
317. **D. perfalcatum** Brotherus. *Yünnan, Setchwan.* II. p. 526.
318.‡ **D. dilatinerve** Cardot et Varde S. India. II. p. 526

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319. **D. assimile** (Hampe) Paris. *Java, Borneo, Mindanao.* p. 208.
320.‡ **D. Blumei** (Nees) Paris. Ceylon, *Java Borneo, Philippines, New Guinea.* p. 209.

321.*†‡**D. fragile** (Hooker) Brotherus. Nepal, Assam, Khasia, Shan States, S. India, Nilgiris, *Annam, Luzon.* p. 209.

322.† **D. subreflexifolium** (C. Müller) Paris. Assam, Khasia, Abor. p. 209.

323. **D. reflexum** (C. Müller) Renauld. *Java, Timor, Flores.* p. 209.

324. **D. reflexifolium** (Mitten) Paris *Sumatra. Java.* p. 209.

325. **D. dives** (C. Müller) Paris. *Java, Borneo.* p. 209.

326. **D. Limprichtii** (Fleischer) Paris. *Java.* p. 209.

327. **D. Braunii** (C. Müller) Paris. *Sumatra, Java, Celebes, Moluccas, Philippines, New Guinea, New Caledonia.* p. 209.

328.‡ **D. leucophyllum** (Hampe) Paris. Ceylon, Malacca, *Sumatra, Java, Philippines.* p. 209.

329.‡ **D. brevisetum** (Dozy et Molkenboer) Paris. Ceylon, *Java, Borneo.* p. 209.

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330. **L. tonkinense** Brotherus et Paris. *Tonkin.* p. 210.

331.‡ **L. tenerum** Mitten. Ceylon. p. 210.

332.‡ **L. nitens** (Thwaites et Mitten) Paris. S. India, Ceylon. p. 210.

333.‡ **L. molle** (C. Müller) Mitten. S. India, *Sunda Islands to New Guinea, Hongkong, Formosa, Luzon, Japan.* p. 210.

334.‡ **L. Renauldi** Brotherus. S. India, Kanara. p. 210.

335.‡ **L. insigne** Mitten. Ceylon. p. 210.

336. **L. siamense** Brotherus. *Siam.* p. 210.

337.*† **L. Taylori** (Schwaegrichen) Mitten. Nepal, Burma. p. 211.

338.*† **L. Walkeri** Brotherus. Coorg, Kanara, Burma. p. 211.

339.‡ **L. strictifolium** Dixon. Kanara. p. 211.

340.‡ **L. Herrogii** Brotherus. Ceylon. p. 211.

341.‡ **L. Renauldii** Brotherus. S. India, Kanara. p. 211.

342.‡ **L. amoenevirens** Mitten. Ceylon. p. 211.

343. **L. Krempfii** Thériot. *Annam.* p. 211.

344. **L. annamense** Thériot. *Annam.* p. 211.

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345. **D. uncinatum** (Fleischer) Renauld. *Java.* p. 212.

346.‡ **D. Mittenii** (Fleischer) Brotherus. Ceylon. p. 212.

347. **D. javanicum** (Brotherus) Renauld. *Java, Lombok.* p. 212.

348. **D. Celebesiae** (Brotherus) Renauld. *Celebes.* p. 212.

349. **D. piliferum** (Brotherus et Paris) Brotherus. *Java, New Caledonia.* p. 212.

350.‡ **D. brevicapsulare** Dixon. Malacca. II. p. 526.

351. **D. braunfelsioides** Herzog. *Ceram.* II p. 526.

Genus : **BRAUNFELSIA.**

352. **B. dicranoides** (Dozy et Molkenboer) Brotherus. *Java.* p. 213.
353. **B. plicata** (Lacoste) Fleischer. *Java.* p. 213.
354.‡ **B. scariosa** (Wilson) Paris. Ceylon, *Borneo.* p. 213.
355. **B. involuta** (Lacoste) Fleischer. *Borneo.* p. 213.
356. **B. enervis** (Dozy et Molkenboer) Paris. *Java.* p. 213.
357.‡ **B. longipes** Dixon. Malacca. II p. 526.

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Family : **LEUCOBRYACEAE.**

Genus : **OCHROBRYUM.**

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359.† **O. Parishii** Mitten. Burma. p. 221.
360.† **O. subulatum** Hampe. Burma. p. 221.
361.† **O. Kurzianum** Hampe-Burma, *Siam.* p. 221.

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362. **S. robustum** Dozy et Molkenboer. *Java.* p. 222.
363. **S. Lowii** Mitten. *Borneo.* p. 222.
364. **S. Nieuwenhuisi** Fleischer. *Borneo, Philippines.* p. 222.
365. **S. apiculatum** Dozy et Molkenboer. *Sumatra, Java, Borneo, Philippines.* p. 222.
366. **S. mucronifolium** (C. Müller) Fleischer. *Java.* p. 222.

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367. **C. pilifer** Dozy et Molkenboer. *Java.* p. 222.
368. **C. speciosus** (Dozy et Molkenboer) Fleischer, *Java.* p. 222.

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369. **L. chlorophyllosum,** C. Müller. Ceylon, *Java, Sumbawa, Celebes, Timor.* p. 223.
370.*† **L. sanctum** Hampe. From Nepal to Melanesia. p. 223.
371. **L. ceylanicum** (Bescherelle) Cardot. Ceylon. p. 224.
372. **L. humillimum** Cardot. India. p. 224.
373. **L. glaucum** (Lin.) Schimper. *Caucasus, Europe, Madeira, Japan.* p. 224.
373*a*.*‡ **L. neilgherense** C. Müller. Sikkim, Bhotan, Nilgiris, Palnis, Ceylon, *Sumatra, Java, Celebes, Borneo, Tonkin, Japan, Korea.* p. 224.
374.‡ **L. Bowringii** Mitten. Ceylon to Japan. p. 224.

375.*‡ **L. aduncum** Dozy et Molkenboer. S. India, Malacca, *Sumatra, Java, Banka, Borneo.* p. 224.

376. **L. scalare** C. Müller. S. India, Malacca, *Java, Sumbawa, Philippines.* p. 224.

377. **L. Teysmannianum,** Dozy et Molkenboer. *Java, Borneo.* p 224.

378. **L. pentastichum** Dozy et Molkenboer. *Java.* p. 224.

379.*† **L. javense** (Bridel) Mitten. Sikkim, Abor, *Java, Borneo, Mindanao, New Guinea.* p. 224.

380. **L. scabrum** Lacoste. *Formosa, China, Japan.* p. 224.

380*a*. **L. Salmoni** Cardot. *Tonkin, China.*

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381.‡ **L. candidum** (Hornschuch) Lindberg. Ceylon to *New Guinea, Philippines, Samoa.* p. 225.

382. **L. albescens** C. Müller. *Indian Archipelago, New Guinea.* p. 225.

383. **L. bogoriense** Fleischer. *Java.* p. 225.

384. **L. Massartii** Renauld et Cardot. *Java.* p. 225.

385.*†‡ **L. octoblepharoides** Bridel. From Nepal to the Pacific Islands. p. 225.

Genus : **OCTOBLEPHARUM.**

386.‡ **O. albidum** (Lin.) Hedwig. Tropics. p. 226.

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387.* **A. Schimperi** Dozy et Molkenboer. Ceylon, Malacca, *Siam, Java, Amboina, Borneo, Philippines, Pacific Islands, Queensland.* p. 227.

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388.‡ **E. Radula** (Thwaites et Mitten) Cardot. Ceylon. p. 228.

389. **E. Blumii** (C. Müller) Fleischer. *Java, Philippines.* p. 228.

390. **E. Sullivantii** (Dozy et Molkenboer) Fleischer. *Java.* p. 228.

Series : POTTIALES.

Subseries : SYRRHOPODONTINEAE.

Family : **CALYMPERACEAE.**

Genus : **SYRRHOPODON.**

391.‡ **S. revolutus** Dozy et Molkenboer. Malacca, *Annam, Mariannes, Queensland, R union, Madagascar.* p. 229.

392. **S. borneensis** (Hampe) Jaeger. *Java, Borneo.* p. 229.

393. **S. confertus** Lacoste. *Banca.* p. 229.

394.‡ **S. caespitosus** Thwaites et Mitten. Ceylon. p. 229.
395.‡ **S. subconfertus** Brotherus. Andamans, *Siam.* p. 229.
396.‡ **S. rufescens** Hooker et Greville. Singapur, *Indian Archipelago, Philippines, Marionnes.* p. 229.
397.‡ **S. tristichus** Nees. Ceylon, *Sumatra, Java, Amboina.* p. 230.
398.‡ **S. albidus** Thwaites et Mitten. Ceylon. p. 230.
399.‡ **S. albovaginatus** Schwaegrichen. Singapur, *Philippines, Pacific Islands.* p. 230.
400.‡ **S. Griffithii** Mitten. Ceylon. p. 231.
401.‡ **S. Herzogii** Brotherus. Ceylon. p. 231.
402. **S. cavifolius** Lacoste. *Banca, Borneo.* p. 231.
403. **S. patutifolius** Thériot et Dixon. *Borneo.* p. 231.
404. **S. horridulus** Fleischer. *Borneo.* p. 231.
405.‡ **S. spiculosus** Hooker et Greville. Malacca, *Indian Archipelago.* p. 231.
406.‡ **S. trachyphyllus** Montagne. Malacca, *Indian Archipelago.* p. 231.
407. **S. Ledruanus** C. Müller. *Borneo.* p. 231.
408. **S. Larminati** Brotherus et Paris. *Tonkin.* p. 231.
409. **S. ciliatus** (Hooker) Schwaegrichen. *Indian Archipelago to New Guinea.* p. 232.
410. **S. subulatus** Lacoste. *Sumatra, Borneo, Celebes, New Guinea.* p. 232.
411. **S. fallax** Lacoste. *Banca, Borneo.* p. 232.
412. **S. Miilleri** (Dozy et Molkenboer) Lacoste. *Indian Archipelago to New Guinea and Samoa.* p. 232.
413. **S. Schiffnerianus** (Fleischer) Brotherus. *Java.* p. 232.
414.‡ **S. strictus** Thwaites et Mitten. Ceylon. p. 233.
415. **S. Treubii** Fleischer. *Java.* p. 233.
416.*†‡**S. Gardneri** (Hooker) Schwaegrichen. N. W. Himalaya, Nepal, Bhotan, Khasia, Ceylon, *Java.* p. 234.
417.‡ **S. affinis** Brotherus. Ceylon. p. 234.
418. **S. Nymani** Fleischer. *Java.* p. 234.
419.‡ **S. semiliber** (Mitten) Bescherelle. Kanara, Malacca. p. 235.
420.‡ **S. Ridleyi** Brotherus. Malacca. II p. 527.
421.‡ **S. ligulifolius** Dixon. Malacca. II p. 527.
422.‡ **S. calymperoides** Cardot et Varde. S. India. II p. 527.
423.‡ **S. leucophanoides** Cardot et Varde. S. India. II p. 527.
424.‡ **S. climbatus** Dixon. Malacca. II p. 527.
425.‡ **S. perakensis** Dixon. Malacca. II p. 527.
426.* **S. mafsuriensis** Dixon Garhwal.

Genus : **CALYMPEROPSIS.**

427. **C. Wiemansii** (Fleischer) Brotherus. *Java.* p. 235.
428. **C. tjibodenensis** Fleischer. *Java.* p. 235.

Genus : **THYRIDIUM.**

429.‡ **Th. Wallisii** (C. Müller) Fleischer. Singapur, *Philippines*. p. 236.
430.* **Th. repens** (Harvey) Mitten. Ceylon, Malacca, *Banka*. p. 236.
431. **Th. ceylonense** (Paris) Fleischer. Ceylon. p. 236.
432.‡ **Th. Manii** (C. Müller) Fleischer. S. India, Andamans. Malacca, *Amboina, Borneo*. p. 236.
433.‡ **Th. undulatulum** (Brotherus) Fleischer. Malacca, *Queensland*. p. 236.
434.‡ **Th. fasciculatum** (Hooker et Greville) Mitten. S. India, Ceylon, Malacca, *Indian Archipelago, New Guinea, Queensland*. p. 236.
435. **Th. Cardoti** Fleischer. *Java*. p. 236.
436. **Th. flavum** (C. Müller) Fleischer. *Java*. p. 236.
437.‡ **Th. pungens** (Dixon) Brotherus. Malacca. II p. 527.

Genus : **CALYMPERES.**

438.‡ **C. Mitteni** Bescherelle. Ceylon. p. 238.
439.‡ **C. bryaceum** Bescherelle. Ceylon. p. 238.
440.‡ **C. Dozyanum** Mitten. Ceylon, Malacca, *Sumatra, Java, Borneo*. p. 238.
441. **C. saigonense** Brotherus et Paris. *Saigon*. p. 238.
442. **C. gemmiphyllum** Fleischer. *Java*. p. 238.
443.‡ **C. Delessertii** Bescherella. Andamans, Malacca. p. 238.
444. **C. tjipanuense** Fleischer. *Java*. II p. 527.
445.‡ **C. tenerum** C. Müller. Bengal. Malacca. *Java, New Caledonia*. p. 239.
446. **C. Schmidtii** Brotherus. *Siam*. p. 239.
447. **C. batavicnse** Fleischer. *Java*. p. 239.
448.‡ **C. omanicum** Bescherelle. Laccadives. p. 239.
449.‡ **C. Pfleidereri** Brotherus. India. p. 239.
450. **C. brachycaulon** Brotherus. *Siam*. p. 239.
451. **C. robustiusculum** Brotherus. *Siam*. p. 239.
452. **C. Bescherellei** Fleischer. *Java*. p. 239.
453.‡ **C. Kurzianum** Hampe. Andamans. p. 239.
454.‡ **C. contractum** Bescherelle. Ceylon. p. 239.
455. **C. acuminatum** Brotherus. *Siam*. p. 239.
456.‡ **C. stenophyllum** Dixon. Malacca. p. 239.
457. **C. hyophyllaceum** C. Müller. *Sumatra, Java, Philippines*. p. 239.
458. **C. menadense** Bescherelle. *Amboina, Celebes*. p. 239.
459.† **C. prionotum** Kurz. Burma. p. 239.
460. **C. subintegrum** Brotherus. *Siam*. p. 240.
461.‡ **C. nitidiusculum** Brotherus. India. p. 240.

462. **C. patulum** Fleischer. *Java.* II, p. 527.
463.† **C. burmense** Hampe. Burma. p. 240.
464.‡ **C. Manii** C. Müller. S. India, Andamans. p. 240.
465. **C. javanicum** Fleischer. *Java.* p. 240.
466. **C. Vriesei** Bescherelle. *Celebes.* p. 240.
467. **C. tuberculosum** (Dixon) Brotherus. *Borneo.* p. 240.
468.‡ **C. tortilloides** Brotherus et Dixon. W. Ghats. p. 240.
469.‡ **C. Motleyi** Mitten. Laccadives, *Borneo, Torres Street, Cape York.* p. 240.
470.‡ **C. nicobarense** Hampe, Nicobars. p. 240.
471.† **C. peguense** Bescherelle. Burma. p. 240.
472.‡ **C. punctulatum** Hampe. Nicobars. p. 240.
473.† **C. varium** Mitten. Burma. p. 240.
474.‡ **C. Thwaitesii** Bescherelle. Ceylon. p. 240.
475.‡ **C. Fordii** Bescherelle. Bombay, Kanara, Ceylon, *Java, Hongkong.* p. 240.
476. **C. Hampei** Bryol. jav. *Malay Archipelago.* p. 240.
477. **C. moluccense** Schwaegrichen. *Malaccas.* p. 240.
478. **C. gracilescens** Brotherus. *Siam.* p. 240.
479. **C. Geppii** Bescherelle. *Java.* p. 240.
480.‡ **C. heterophyllum** (Mitten) Bescherelle. Ceylon. p. 240.
481. **C. retusum** Bescherelle. *Banca.* p. 240.
482.‡ **C. salakense** Bescherella. Malacca, *Java, Philippines.* p. 240.
483.‡ **C. ceylanicum** Bescherelle. Ceylon. p. 240.
484. **C. subsalakense** Dixon. *Borneo.* p. 240.
485. **C. altissimum** Fleischer. *Celebes.* p. 240.
486.‡ **C. recurvifolium** Bescherelle. Malacca. p. 240.
487. **C. fasciculatum** Dozy et Molkenboer. *Java.* p. 240.
488.‡ **C. leucoloma** Bescherelle. Ceylon. p. 240.
489. **C. orientale** Mitten. *Java, Labuan, Philippines.* p. 240.
490. **C. serratum** A. Braun. *Malay Archipelago, Hongkong, Philippines, Samoa.* p. 240.
491. **C. subserratum** Fleischer. *Java.* p. 240.
492. **C. cristatum** Hampe. *Java, Borneo.* p. 240.
493.‡ **C. Nietneri** C. Müller. Kanara, Ceylon, *Java.* p. 240.
494.‡ **C. andamanense** Bescherelle. Andamans. p. 240.
495. **C. megamendonense** Fleischer. *Java.* p. 240.
496. **C. longifolium** Mitten. *Borneo, Labuan.* p. 240.
497. **C. Bacarii** Hampe. *Borneo.* p. 241.
498. **C. pachyphyllum** Thérot et Varde. *Annam.* II, p. 527.
499.‡ **C. constrictum** Dixon. Malacca. II, p. 527.
500.‡ **C. setifolium** Hampe. Malacca, *Philippines.* II, p. 527.
501.‡ **C. mangalorensis** Dixon et Varde, Mangalore.

Subseries : ENCALYPTINEAE.

Family : **ENCALYPTACEAE.**

Genus : **ENCALYPTA.**

502. **E. alpina** Smith. *Caucasus, C. and N. Asia, Alpine regions of Europe, N. Am.* p. 242.

503.* **E. ciliata** (Hedwig) Hoffmann. Kashmir, N. W. Himalaya, *Subcosmopolitan in N. Himisphere.* p. 242.

504. **E. vulgaris** (Hedwig) Hoffmann. *Central Asia, Subcosmopolitan in N. Hemisphere.* p. 242.

505. **E. rhabdocarpa** Schwaegrichen. *Central Asia, Subcosmopolitan in N. Hemisphere.* p. 242.

506. **E. affinis** Hedwig fil. *Caucasus. Siberia, Europe.* p. 243.

507. **E. contorta** (Wulfsberg) Lindberg. *Caucasus, Siberia, Europe.* p. 243.

Subseries : POTTIINEAE.

Family : **POTTIACEAE.**

Genus : **PLEUROWEISIA.**

508. **P. Schliephackei** Limpricht. *Caucasus, Europe.* p. 245.

Genus : **MOLENDOA.**

509. **M. Hornschuchiana** (Funck) Lindberg. *Setschwan, Alps.* p. 245.

510. **M. Sendtneriana** (Bryol. eur.) Limpricht. *Caucasus, C. Asia, Siberia, China, Japan, Europe.* p. 245.

511. **M. yunnanensis** Brotherus. *Yünnan.* p. 245.

512.* **M. Roylei** (Mitten) Brotherus. W. Himalaya. p. 245.

Genus : **ANOECTANGIUM.**

513. **A. obtusicuspis** Bescherelle. *Yunnan.* p. 246.

514.* **A. crassinervium** Mitten. Tibet. p. 246.

515.‡ **A. hymenodontoides** (C. Müller) Jaeger. Ceylon. p. 246.

516. **A. compactum** Schwaegrichen. *Caucasus, Europe, Afr., N. Am., Greenland, Bolivia, New Zealand.* p. 246.

517. **A. lombokense** Brotherus. *Lombok.* p. 246.

518.* **A. clarum** Mitten. Sikkim. p. 246.

519.* **A. Stracheyanum** Mitten. Himalaya, Garhwal, Kumaon, Sikkim, S. India. p. 246.

520.* **A. laetum** Renauld et Cardot. Himalaya. p. 246.

521.* **A. Stevensii** Renauld et Cardot. Himalaya. p. 246.

522.‡ **A. Walkeri** Brotherus. W. Ghats, Coorg. p. 246.
523.* **A. crispulum** Wilson. N. W. Himalaya, S. India. p. 246.
524.* **A. bicolor** Renauld et Cardot. Kumaon, Sikkim. (Dixon in Journal of Botany.)
525.* **A. Thomsoni** Mitten. Kumaon.
526.* **A. Duthiei** Brotherus. Garhwal, Kumaon. (Dixon in J. of Bot.).
526*a*. **A. euchloron** (Schwaegrichen) Mitten. S. India, Java, *Philippines, C. Afr.. Mexico, Antilles, S. Am.* p. 246.

Genus : **MERCEYOPSIS.**

527.‡ **M. angulosa** Brotherus et Dixon. India. p. 247.
528.* **M. sikkimensis** (C. Müller) Brotherus et Dixon. Sikkim. p. 247.
529.*† **M. longirostris** (Griffith) Brotherus et Dixon. Himalaya, Khasia. p. 247.
530.‡ **M. hymenostylioides** Brotherus et Dixon. India. p. 247.
531.‡ **M. pellucida** Brotherus et Dixon. India. p. 247.
532. **M. gedeana** (Lacoste) Fleischer. *Java.* p. 247.
533. **M. minuta** Brotherus et Dixon. N. W. Himalaya.
534.‡ **M. spathulifolia** Dixon et Varder. Mangalor.

Genus : **MERCEYA.**

535. **M. solfatara** Fleischer. Java. p. 247.
536. **M. thermalis** Fleischer. Java. p. 247.

Genus : **ASTOMUM.**

537. **A. tonkinense** Paris et Brotherus. *Tonkin.* p. 252.
538.‡ **A. abbreviatum** Thwaites et Mitten. Ceylon. p. 252.
539.‡ **A. minutum** Dixon et Varde. Palni Hills.

Genus : **HYMENOSTOMUM.**

540.* **H. microstomum** (Hedwig) R. Brown. Kashmir, *Caucasus, Europe, N. Africa.* p. 254.
541. **H. tortile** (Schwaegrichen) Bryol eur. *Caucasus, Europe, N. Africa.* p. 254.
542.‡ **H. edentulum** (Mitten) Bescherelle. S. India. *Tonkin, Java, New Caledonia.* p. 254.
543.‡ **H. malayense** Fleischer. Singapur, *Java, Formosa.* p. 254.
544.* **H. obscurissimum** Dixon. Hazara.

Genus : **WEISIA.**

545. **W. platyphylloides** Cardot. *Formosa, Korea.* p. 255.
546.* **W. Wimmeriana** (Sendtner) Bryol. eur. Kashmir, *Caucasus, Europe.* p. 255.

547.‡ **W. viridula** (Lin.) Hedwig. N. W. Himalaya, S. India, Ceylon, Cosmopolitan. p. 255.

548.‡ **W. flavipes** Hooker fil. et Wilson. Ceylon, *Java, Philippines, Australia, New Zealand.* p. 255.

549. **W. longiseta** Lesguereux. *Formosa, N. Am.* p. 255.

549*a*.‡ **W. macrospora** Cardot. S. India.

Genus : **GYMNOSTOMUM.**

550. **G. rupestre** Schleicher. *Caucasus, China, Japan, Philippines, Asia Minor, Europe, N. Am.* p. 256.

551.* **G. calcareum** Bryol. germ. Himalaya, *Caucasus, Siberia, W. Asia, N. Africa, N. and S. Am., Australia.* p. 256.

Genus : **GYROWEISIA.**

552. **G. mosis** (Lorentz) Paris. *Persia, Sinai.* p. 256.

553. **G. brevicaulis** Hamps. *Java, Borneo, New Caledonia.* p. 256.

Genus : **HYMENOSTYLIUM.**

554.* **H. curvirostre** (Ehrhart) Mitten. N. W. Himalaya, *Caucasus, Europe, N. Am.* p. 257.

555.* **H. aurantiacum** Mitten. Chilas, Gilgit, W. Tibet, Kumaon, Sikkim, Burma. p. 257.

556.* **H. xanthocarpum** (Hooker) Bridel. Nepal. p. 257.

557.* **H. annotinum** Mitten. Bhotan. p. 257.

558.* **H. Sheaphardae** Cardot et Dixon. Binsar. p. 257.

559.*† **H. inconspicuum** Griffith. N. W. and E. Himalaya, Khasia, *China, Philippines.* p. 257.

Genus : **EUCLADIUM.**

560. **E. verticillatum** (Lin.) Bryol. eur. *Caucasus, China, Asia Minor, Europe, N. Afr., N. Am.* p. 258.

Genus : **RHAMPHIDIUM.**

561. **Rh. vaginatum** (Dozy et Molkenboer) Mitten. *Sumatra.* p. 259.

562.‡ **Rh. madurense** Dixon et Varde. Palni Hills.

Genus : **TRICHOSTOMUM.**

563.*‡‡**T. cylindricum** (Bruch) C. Müller. Nepal to Ceylon, *Japan, S. Africa, Europe, N. Am.* p. 260.

564.‡ **T. minusculum** Dixon et Varde. Palni Hills.

565.*† **T. longifolium** (Griffith) Brotherus. Sikkim, Khasia, Burma. p. 260.

566.† T. **khasianum** (Mitten) Brotherus. Khasia. p. 260.
567.*‡T. **stenophyllum** (Mitten) Brotherus. Sikkim, Nilgiris, Palnis. p. 260.
568.* T. **cylindrotheca** (Mitten) Brotherus. Sikkim. p. 260.
569.‡ T. **orthodontum** (Mitten) Brotherus. Nilgiris. p. 260.
570.‡ T. **bombayense** C. Müller. W. India. p. 260.
571.‡ T. **hyalinoblastum** Brotherus. S. India. p. 260.
572. T. **ardjunense** Fleischer. *Java.* p. 260.
573.‡ T. **angustatum** Fleischer. Ceylon, *Java, S. China.* p. 260.
574. T. **sarawakense** Dixon. *Borneo.* p. 260.
575.‡ T. **duriusculum** (Mitten) Brotherus. S. India, Ceylon. p. 260.
576. T. **cuspidatum** Dozy et Molkenboer. *Java, Philippines.* p. 260.
577. T. **crispulum** Bruch. *Caucasus, Asia Minor, Amur, Korea, Japan, Europe, N. Afr., N. Am.* p. 260.
578.* T. **Lilliei** Dixon. Hazara.
579. T. **brachydontium** Bruch. *Caucasus, Japan, Europe, Afr., New Zealand.* p. 260.

Genus : **PSEUDOSYMBLEPHARIS.**

580.‡ Ps. **indica** Dixon et Varde. Palni Hills.

Genus : **TIMMIELLA.**

581.*‡T. **anomale** (Bryol. eur.) Limpricht. Hazara, Chilas, W. Himalaya, S. India, *Europe, United States, Mexico.* p. 262.

Genus : **TORTELLA.**

582. T. **tortuosa** (Lin.) Limpricht. *C. Asia, Persia, Caucasus, China, Europe, N. America.* p. 263.
583.* T. **fragilis** (Drummond) Limpricht. W. Himalaya, *Caucasus, Siberia, C. Asia, China, Europe, N. Am.* p. 263.
584. T. **Brotheri** (Lindberg) Brotherus. *Caucasus.* p. 263.

Genus : **PLEUROCHAETE.**

585.* P. **squarrosa** (Bridel) Lindberg. W. Himalaya, *Yünnan, Persia, Caucasus, Europe, N. Am.* p. 264.

Genus : **CHIONOLOMA.**

586.† Ch. **induratum** (Mitten) Dixon. Burma. p. 264

Genus : **LEPTODONTIUM.**

587. L. **Warnstorfii** Fleischer. *Java.* p. 267.
588. L. **humillimum** Brotherus. *Lombok.* p. 267

589. **L. limbatulum** Fleischer. *Java.* p. 267.
590.* **L. dentatum** (Wilson) Paris. *Sikkim.* p. 267.
591.‡ **L. squarrosum** (Hooker) Paris., India. p. 268.
592. **L. subdenticulatum** (C. Müller) Paris. *Java* p. 268.
593. **L. aggregatum** C. Müller. *Java, Lombok.* p. 268.

Genus : **HYOPHILA.**

594.‡ **H. Walkeri** Brotherus. India : Karwar. p. 270.
595.‡ **H. cylindrica** (Hooker) Jaeger. Bengal, S. India, Ceylon. p. 270.
596.‡ **H. circinnata** (C. Müller) Jaeger. India. p. 270.
597.*‡**H. involuta** (Hooker) Jaeger (*var. of H. cylindrica*). United Prov., N. W. Himalaya, Nepal, Sikkim, S. India. p. 270.
598.‡ **H. spathulata** (Harvey) Jaeger. S. India, Ceylon. p. 270.
599.*‡**H. perannulata** Renauld et Cardot. Sikkim, " India ". p. 270.
600.‡ **H. subflaccida** Brotherus et Dixon. N. W. Himalaya, Satara. p. 270.
601. **H. Dozy-Molkenboeri** Fleischer. *Sumatra, Java, Amboina.* p. 270.
602.‡ **H. Micholitzii** Brotherus. Ceylon, *Indian Archipelago, New Guinea.* p. 270.
603. **H. javanica** (Nees) Bridel. *Java.* p. 270.
604. **H. apiculata** Fleischer. *Java.* p. 270.
605. **H. lombokensis** Brotherus. *Lombok.* p. 270.
606. **H. Moutieri** Brotherus et Paris. *Tonkin.* p. 270.
607. **H. Dittei** Thériot et Varde. *Annam.* p. 270.
608. **H. stenophylla** Cardot. *Formosa.* p. 271.
609.‡ **H. comosa** Dixon et Varde. S. India.
610.‡ **H. grandiretis** Dixon et Varde. Madras.
611.‡ **H. mollifolia** Dixon et Varde. Palni Hills.
611*a*. **H. validinervis** Cardot et Varde. S. India. II, p. 528.
611*b*. **H. viridula** Cardot et Varde. S. India. II, p. 528.

Genus : **DIDYMODON.**

612.* **D. rubellus** (Hoffmann) Bryol. eur. Hazara, *C. Asia, Caucasus, Siberia, Kamtchatka, Japan, China, N. Africa, Europe.* p. 273.
613.* **D. alpigena** Venturi. Kashmir, *N. Asia, Europe, N. Am.* p. 273.
614.* **D. Wallichii** (Mitten) Brotherus. Himalaya : Garhwal, Kashmir. p. 273.
615.* **D. recurvus** (Mitten) Brotherus. Himalaya : Garhwal. p. 273.
616.*†**D. rufescens** (Hooker) Brotherus. Garhwal, Nepal, Khasia. p. 273.
617. **D. luridus** Hornschuch. *Persia, Caucasus, Europe, N. Afr., N. Am.* p. 273.

618.* **D. tophaceus** (Bridel) Juratzka. Tibet, *W. Asia, Caucasus, Europe, N. Afr., N. Am.* p. 273.
619. **D. excurrens** Brotherus. *Transcaspia.* p. 273.
620. **D. Hausknechtii** (Juratzka) Brotherus. *Persia.* 273.
620*a*. **D. cordatus** Juratzka. *Caucasus, Eur.* p. 273.
621. **D. rufus** Lorentz. *Central Asia, Siberia, Europe, Arctic Am.* 274.
622.* **D. albicuspis** (Mitten) Brotherus. Sikkim. p. 274.
623.* **D. ovatus** (Mitten) Brotherus. Sikkim. p. 274.
624.* **D. maschalogenus** (Renauld et Cardot) Brotherus. Sikkim. p. 274.
625.* **D. confertifolius** (Mitten) Brotherus. Sikkim. p. 274.
626. **D. Tenii** (Herzog) Brotherus. *Yünnan.* II, p. 528.
627. **D. pulvinans** (Herzog) Brotherus. *Yünnan.* II, p. 528.
628. **D. hostilis** (Herzog) Brotherus. *Yünnan.* II, p. 528.
629. **D. yunnanensis** (Herzog) Brotherus. *Yünnan.* II, p. 528.
630. **D. Loeskei** Fleischer. *Java.* II, p. 528.
631.*‡ **D. obtusifolius** Cardot. Kumaon, S. India.
632.‡ **D. strictifolius** Dixon et Varde. Palni Hills.

Genus : **BARBULA.**

633.* **B. gracilenta** Mitten. W. Himalaya. p. 278.
634.‡ **B. gangetica** C. Müller. Bengal, United Prov. p. 278.
635. **B. bagelensis** Fleischer. *Java.* p. 278.
636. **B. sabolifera** Fleischer. *Java.* p. 278.
637.*†‡ **B. comosa** Dozy et Molkenboer. Nepal, Sikkim, Abor, Khasia, Malacca, *Indian Archipelago.* p. 278.
638. **B. hastata** Mitten. Sikkim. p. 278.
639. **B. sinuosa** (Wilson) Braithwaite. *Caucasus, Europe.* p. 278.
640. **B. icmadophylla** Bryol. eur. *Caucasus, Siberia, Europe.* p. 278.
641. **B. acuta** Bridel. *Caucasus, Europe, N. Afr., N. Am.* p. 278.
642. **B. fallax** Hedwig. *Caucasus, Siberia, Europe, N. Afr., N. Am.* p. 278.
643. **B. reflexa** Bridel. *Caucasus, Siberia, Europe, N. Am.* p. 278.
644.* **B. vinealis** Bridel. Nepal, Yünnan, *Persia, Tonkin, Caucasus, Asia Minor, Europe, N. Am.* p. 278.
645. **B. spadicea** Mitten. *Caucasus, Europe, N. Am.* p. 278.
646. **B. rigidula** (Hedwig) Mitten. *Caucasus, Siberia, Europe, N. Am.* p. 278.
647. **B. incrassata** Lindberg. *Caucasus.* p. 278.
648.* **B. recurvifolia** Mitten. Tibet, Sikkim. p. 278.
649.* **B. subpellucida** Mitten. Tibet, W. Himalaya. p. 278.
650.* **B. nigrescens** Mitten. Kumaon, Sikkim. p. 278.
651.* **B. constricta** Mitten. W. Himalaya, Nepal, Sikkim. p. 278.
652. **B. Elberti** Brotherus. *Lombok.* p. 278.

653. **B. pachydictyon** Brotherus. *Lombok.* p. 278.
654.* **B. asperifolia** Mitten. Sikkim, *Alatau.* p. 279.
655.*‡**B. indica** Bridel. Nepal, United Prov., Bengal, S. India, Ceylon, *Indian Archipelago to New Guinea, Philippines, Formosa, S. and E. Africa.* p. 279.
656. **B. tonkinensis** (Bescherelle) Brotherus. *Tonkin.* p. 279.
657. **B. scaberrima** Brotherus et Paris. *Tonkin.* p. 279.
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684. **B. gracillima** (Herzog) Brotherus. *Yünnan.* II, p. 528.
685.‡ **B. denticulata** Dixon et Varde. S. India.
686.* **B. fuscifolia** C. Müller. Garhwal. Dr. Dudgeon's collection.
687.* **B. horricomis** C. Müller. Hazara, Garhwal. Dr. Dudgeon's collection. Sikkim.

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694. **P. caucasica** (Lindberg) Paris. *Caucasus.* p. 291.
695. **P. pungens** (Lindberg) Brotherus. *Caucasus.* p. 291.
696.‡**P. denticulata** Dixon et Varde. S. India.

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781.*† **Ph. pulchellum** (Griffith) Mitten. Sikkim, Abor.
782.† **Ph. upandum** (Griffith) Mitten. Abor.
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Genus : **ANOMOBRYUM.**

892. **A. concinnatum** (Sprecco.) Lindberg. *Caucasus, Europe., N. Am.* p. 372.
893.* **A. kashmirense** Brotherus. Kashmir. p. 372.
894.* **A. astorense** Brotherus. Kashmir. p. 372.
895.*‡ **A. nitidum** (Mitten) Jaeger. N. W. Himalaya, Simla, Sikkim, Ceylon, *Tonkin. Yünnan.* p. 372.
896.‡ **A. Schmidii** (C. Müller) Jaeger. Nilgiris. p. 372.
897.*†‡ **A. cymbifolium** (Lindberg) Brotherus. Garhwal, Bhotan, Khasia, W. Ghats, S. India. p. 372.
898.* **A. auratum** (Mitten) Jaeger. Nepal, Sikkim. p. 372.
899.‡ **A. subcymbifolium** (C. Müller) Fleischer. Ceylon, *Java.* p. 372.
900.‡ **A. subnitidum** Cardot et Varde. S. India. II, p. 530.
901. **A. proligerum** Brotherus et Herzog. *Yünnan.* II, p. 530.
902.‡ **A. latifolium** Cardot et Varde. S. India. II, p. 530.

Genus : **PLAGIOBRYUM.**

903. **P. Zierii** (Dickson) Lindberg. *C. Asia, Caucasus, China, Europe.* p. 373.

904. **P. demissum** Hoppe et Hornschuh. *C. Asia, Europe, N. Am.* p. 373.

Genus : **LEPTOBRYUM.**

905.* **L. pyriforme** (Lin.) Wilson. W. Himalaya, Chilas, *C. and N. Asia, Caucasus, Japan, Europe, N. and S. Am., Austr.* p. 374.

Genus : **BRYUM.**

906.* **B. warneum** Blandow. W. Himalaya (?), *Europe, N. Am.* (?) p. 376.

907. **B. Brownii** (R. Brown) Bryol. eur. *C. Asia, Europe.* p. 376.

908. **B. mollifolium** Philibert. *C. Asia.* p. 376.

909. **B. vernum** Philibert. *C. Asia.* p. 376.

910.* **B. pendulum** (Hornschuch) Schimper. W. Himalaya, *Caucasus, Amur, Sachalin, N. Am.* p. 376.

911. **B. Alexandri** Philibert. *C. Asia.* p. 376.

912. **B. leptoglyphodon** Philibert. *C. Asia.* p. 377.

913. **B. paradoxum** Philibert. *C. Asia.* p. 377.

914. **B. leucoglyphodon** Philibert. *C. Asia.* p. 377.

915. **B. arcticum** (R. Brown) Bryol. eur. *C. Asia, Siberia, Europe.* p. 377.

916.* **B. fulvellum** Wilson. Sikkim. p. 378.

917.* **B. inclinatum** (Swartz) Bryol. eur. Himalaya, *Caucasus, Siberia, Europe, N. Am.* p. 378.

918.* **B. calophyllum** R. Brown. Tibet, *Siberia, Europe, N. Am.* p. 381.

919. **B. microcalophyllum** Philibert. *C. Asia.* p. 381.

920. **B. subcalophyllum** Philibert. *C. Asia.* p. 381.

921. **B. submucronatum** Philibert. *C. Asia.* p. 381.

922. **B. axillare** Philibert. *C. Asia.* p. 381.

923. **B. amblyophyllum** Philibert. *C. Asia.* p. 381.

924. **B. timmiostomoidea** Philibert. *C. Asia.* p. 381.

925. **B. nucronifolium** Philibert. *C. Asia.* p. 381.

926. **B. spinifolium** Philibert. *C. Asia.* p. 381.

927. **B. crassimucronatum** Philibert. *C. Asia.* p. 381.

928.* **B. cellulare** Hooker. N. W. Himalaya, Burma, Hazara. p. 384.

929.* **B. splachnoides** (Harvey) C. Müller. N. W. Himalaya, Nepal, *Yünnan.* p. 384.

930. **B. sahyadrense** Cardot et Dixon. W. Ghats. p. 384.

931.‡ **B. ghatense** Brotherus et Dixon. W. Ghats. p. 384.

932.* **B. compressidens** C. Müller. Nepal, *Java, Bali.* p. 384.
933. **B. formosanum** Brotherus. *Formosa.* p. 384.
934. **B. purpurascens** (R. Brown) Bryol. eur. *C. Asia, Siberia, Novaya, Semlya, Europe, Greenland, Labrador.* p. 384.
935. **B. tessellatum** Philibert. *C. Asia.* p. 384.
936. **B. cernuum** (Swartz) Lindberg. *Caucasus, Amur, Schalin, Europe, N. Am.* p. 385.
937.* **B. flaccum** Wilson. Sikkim. p. 385.
938. **B. rutilans** Bridel. *Thian Shan, Siberia, N. Europe, Greenland.* p. 386.
939. **B. pallens** Swartz. *Caucasus, Siberia, Japan, Europe, N. Am., Ecuador.* p. 386.
940.* **B. exstans** Mitten. W. Tibet.
941.* **B. turbinatum** (Hedwig) Schwaegrichen. N. W. Himalaya, *C. Asia, Kurdistan, Caucasus, Syria, Arabia, Europe, N. America, Ecuador.* p. 386.
942. **B. Juratzkai** Milde. *Persia.* p. 386.
943. **B. doilachanicum** Juratzka et Milde. *Persia.* p. 386.
944. **B. syriacum** Lorentz. *Persia, Syria, Taurus.* p. 386.
945.* **B. Schleicheri** Schwaegrichen. Himalaya, *C. Asia, Caucasus, Europe, N. Am.* p. 386.
946.* **B. Thomsoni** Mitten. Kashmir, W. Tibet. p. 386.
947.* **B. Duvalii** Voit. Kashmir, *Siberia, Caucasus, Europe, N. and S. Am.* p. 386.
948.* **B. ventricosum** Dickson. Gilgit, N. W. Frontier Prov., Kashmir, Tibet, *Tonkin, C. Asia, Siberia, Caucasus, Europe, N. Afr., N. Am.* p. 387.
949. **B. leptocaulon** Cardot. *Formosa.* p. 387.
950. **B. bimum** Schreber. *Caucasus, Siberia, Europe, N. and S. Am., New Zealand, Tasmania.* p. 387.
951. **B. affine** (Bruch) Lindberg. *Caucasus, Siberia, Amur, Europe, N. Am.* p. 387.
952. **B. elwendicum** Fehlner. *Persia.* p. 387.
953. **B. cirratum** Hoppe et Hornschuch. *Caucasus, Siberia, Asia Minor, Europe, N. Am.* p. 389.
954.* **B. subrotundum** Bridel. Himalaya, *Siberia, Europe, Greenland, N. Am.* p. 389.
955.* **B. pallescens** Schleicher. Himalaya, *Caucasus, N. Asia, Europe, N. Am.* p. 389.
956.*† **B. caespiticium,** Lin. Khasia, Simla, Kashmir, *C. and N. Asia, Sachalin, Japan, China, Caucasus, Asia Minor, Europe, N. Afr., N. Am., Sandwich Isl., New Zealand.* p. 390.
957. **B. Funckii** Schwaegrichen. *Caucasus, Transcaspia, Siberia, Europe.* p. 390.

958.* **B. tibetanum** Mitten. Tibet, Kashmir. p. 390.
959.* **B. Gamblei** Brotherus. Kashmir. p. 390.
960.*†‡ **B. argenteum** Lin. Hazara, Chilas, N. W. Frontier Prov., Garhwal, Nepal, Sikkim, Khasia, S. India, Anamalais, Ceylon, *Cosmopolitan.* p. 391.
960*a*. **B. Peteloti** Thériot et Henry. *Tonkin.*
961. **B. garutense** Fleischer. *Java.* p. 391.
962. **B. leucophyllum** Dozy et Molkenboer. Java, Celebes. p. 392.
963.*‡ **B. coronatum** Schwaegrichen. N. W. Himalaya, Bengal, S. India, Tropical Cosmopolitan. p. 392.
964.‡ **B. Montagneanum** C. Müller. Nilgiris. p. 393.
965.‡ **B. rugosum** C. Müller. Nilgiris. p. 393.
966.‡ **B. ceylonense** Brotherus et Dixon. Ceylon. p. 393.
967. **B. Culbigerum** Fleischer. Java. p. 393.
968. **B. Barnesu Wood,** *Caucasus, Syria, Sinai, Europe, N. Afr., N. Am.* p. 393.
969. **B. junghuhnianum** Hampe. Java. p. 393.
970.* **B. hemisphaerocarpum** C. Müller. Kumaon, Nepal, Sikkim. p. 393.
971.‡ **B. pseudopachytheca,** C. Müller. India. p. 393.
972. **B. murale** Wilson. *Caucasus, Europe, N. Afr.* p. 394.
973. **B. pangerangense** Fleischer. *Java.* p. 394.
974. **B. Sandii** Dozy et Molkenboer. *Java.* p. 394.
975.‡ **B. cognatum** Mitten. Ceylon. p. 394.
976. **B. Sauteri** Bryol. eur. *Caucasus, Europe.* p. 394.
977.*† **B. rubens** Mitten. Sikkim, Assam, *Europe.* p. 394.
978. **B. javense** Fleischer. *Java.* p. 394.
979.‡ **B. lamprostegium** C. Müller. Nilgiris, (N. W. Himalaya ?). p. 394.
980. **B. erythropilum** Fleischer. *Java.* p. 394.
981. **B. Gedeanum** Bryol. jav. *Java.* p. 394.
982. **B. subplumosum** Brotherus et Paris. *Tonkin.* p. 395.
983.* **B. plumosiforme** Renauld et Cardot. Sikkim. p. 395.
984.† **B. ambiguum** Duby. Burma, *Tonkin, Sumatra, Java, Philippines.* p. 395.
985.*‡ **B. nitens** Hooker. Nepal, S. India, Ceylon, *Java.* p. 395.
986. **B. weberiforme** Dixon. *Borneo.* p. 395.
987.*‡ **B. porphyroneuron** C. Müller. Sikkim, Nilgiris, Ceylon, *Sumatra, Java.* p. 395.
988. **B. porphyroneuron** C. Müller, *var.* **erythrinum** (Mitten). Sikkim, Ceylon, *Java.* p. 395.
989. **B. erythropus** Fleischer. *Java.* p. 395.
990. **B. Mühlenbeckii** Bryol. eur. *Caucasus, Europe, N. Am.* p. 396.
991. **B. gemmiparum** De Notaris. *Caucasus, Europe.* p. 396.
992.* **B. evanidinerve** Brotherus. Kashmir. p. 396.

993. **B. alpinum** Hudson. *Caucasus, Europe, Afr., N. Am.* p. 396.
994. **B. Mildeanum** Juratzka. *Caucasus, Europe.* p. 396.
995.*†‡ **B. pseudoalpinum** Renauld et Cardot.
=**B. teretiusculum** Hooker. Garhwal, Nepal, Sikkim, Khasia, Nilgiris, Palnis, Ceylon. p. 396.
996. **B. torquescens** Bryol. eur. *Persia, Caucasus, Asia Minor, Europe, N. and S. Am.* p. 397.
997. **B. salakense** Cardot. *Java.* p. 397.
998.* **B. amoenum** Brotherus. Kashmir. p. 398.
999.* **B. capillare** Lin. Kashmir, *Caucasus, C. Asia, Siberia, Japan, Europe, N. Afr., N. Am.* p. 398.
1000. **B. Treubii** Brotherus. *Java.* p. 399.
1001.‡ **B. apalodictyoides** C. Müller. Nilgiris, Palnis. p. 399.
1002.* **B. recurvulum** Mitten. Nepal, W. Himalaya. p. 400.
1003. **B. Decaisnei** Dozy et Molkenboer. *Java.* p. 400.
1004.*‡ **B. Zollingeri** Duby. Nepal, Nilgiris, Ceylon, *Java.* p. 400.
1005.*‡ **B. ramosum** (Hooker) Mitten. Nepal, Nilgiris, Palnis, Coorg, Ceylon, *Java, Tonkin.* p. 400.
1006. **B. Zickendrathii** Cardot. *Celebes.* p. 400.
1007.†‡ **B. medianum** Mitten. Khasia, Nilgiris. p. 400.
1008.‡ **B. formosum** Mitten. Nilgiris. p. 402.
1009.* **B. strigosum** Wilson.
=**B. Wightei**, Mitten. S. India, Ceylon. p. 402.
1010.‡ **B. Bohnhofii** C. Müller. Ceylon. p. 402.
1011.‡ **B. retusifolium** Cardot et Varde. S. India, Madura. II, p. 531.
1012.‡ **B. Andrei** Cardot et Varde. S. India. II, p. 531.
1013.‡ **B. Vellei** Cardot et Varde. S. India. II, p. 531.
1014.* **B. Blindii** Bryol. eur. N. W. Frontier Prov., *Alps.*
1015.‡ **B. euryphyllum** Dixon et Varde. S. India.
1016.‡ **B. pachycladum** Cardot. S. India.

Genus: **RHODOBRYUM.**

1017.*†‡ **Rh. giganteum** (Hooker) Paris. Nepal, Sikkim, Khasia, S. India, Ceylon, *Sumatra, Java, Borneo, Japan, China, Bourbon.* p. 404.
1018.*‡ **Rh. roseum** (Weis) Limpricht. N. W. Himalaya, Garhwal, Ceylon, *Caucasus, Siberia, Japan, China, Europe.* p. 404.

Family: **LEPTOSTOMACEAE.**

Genus: **LEPTOSTOMUM.**

1019. **L. exodontium** Fleischer. *Java.* p. 405.
1020.‡ **L. densum** Mitten. Ceylon. p. 405.

1021. **L. celebicum** Brotherus. *Celebes.* p. 405.
1022. **L. emarginatum** Brotherus. *Java.* p. 405.
1023. **L. Pinaiae** Herzog. *Ceram.* p. 405.

Family : **MNIACEAE.**

Genus : **ORTHOMNIUM.**

1024.* **O. crispum** Wilson. Garhwal, Sikkim. p. 409.
1025.*† **O. trichomitrium** Wilson. Sikkim, Khasia. p. 409.

Genus : **MNIUM.**

1026.* **M. heterophyllum** (Hooker) Schwaegrichen. W. Himalaya, Nepal, *Caucasus.* p. 414.
1027. **M. immarginatum** Lindberg. *Caucasus, Altai.* p. 413.
1028.* **M. orthorhynchum** Bridel. W. Himalaya, *C. Asia, Siberia, Sachalin, Japan, China, Caucasus, Europe.* p. 414.
1029.* **M. lycopodioides** (Hooker) Schwaegrichen. Himalaya, Nepal, Sikkim, *C. Asia, Europe.* p. 414.
1030.* **M. Thomsoni** Schimper. Sikkim, *Yünnan, Japan.*
1031.* **M. riparium** Mitten. W. Himalaya, *Caucasus, Siberia, Europe.* p. 414.
1032.* **M. marginatum** (Dickson) Palisot. W. Himalaya, *Caucasus, Siberia, Europe, N. Am.* p. 414.
1033. **M. spinulosum** Bryol. eur. *Caucasus, Europe, N. Am.* p. 414.
1034. **M. spinosum** (Voit) Schwaegrichen. *C. Asia, Caucasus, Europe, N. Am.* p. 414.
1035.*‡ **M. rostratum** Schrader. Chilas, Kashmir, Tibet, Kumaon, Sikkim, S. India, Ceylon, Cosmopolitan. p. 415.
1036.‡ **M. Nietneri** C. Müller. Ceylon. p. 415.
1039.*†‡**M. rhynchophorum** Hooker. N. W. Himalaya ; Simla, Kumaon, Sikkim, Bhotan, Khasia, Nilgiris, Ceylon. p. 415.
1040. **M. elimbatum** Fleischer. *Java.* p. 415.
1041.*†‡**M. coriaceum** Griffith. N. W. Himalaya, Khasia, S. India. p. 415.
1042. **M. yunnanense** Thériot. *Yünnan, China, Japan.* p. 415.
1043.*† **M. succulentum** Mitten. Nepal, Assam, Khasia, S. India. p. 415.
1044. **M. integrum** Bryol. jav. *Sumatra, Java.* p. 415.
1045.* **M. sikkimense** Renauld et Cardot. Sikkim. p. 415.
1045*a*. **M. formosicum** Cardot. *Formosa.* p. 415.
1046. **M. subvesicatum** Cardot et Thériot. *Tonkin.* p. 415.
1047.* **M. undulatum** Lin.) Weis. Sikkim, *Caucasus, W. Asia, Europe, N. Afr.* p. 415.

1048.* **M. cuspidatum** (Lin.) Leysser. N. W. Himalaya, Garhwal, *Caucasus, Japan, N. Asia, Europe, N. Am.* p. 415.

1049.* **M. medium** Bryol. eur. Himalaya, Sikkim, *Caucasus, Siberia, Japan, Europe, N. Am.* p. 416.

1050.* **M. Seligeri** Juratzka. W. Himalaya, *Caucasus, Siberia, Europe.* p. 416.

1051.* **M. Trichomanes** Mitten. W. Himalaya, *China, Japan.* p. 416.

1052. **M. affine** Blandow. *Caucasus, Siberia, Japan, Europe, N. Afr., N. Am.* p. 416.

1053.* **M. stellare** Reichenbach. W. Himalaya *Siberia, Amur, Japan, Europe, N. Am.* p. 417.

1054.* **M. parvulum** Mitten. Himalaya. p. 417.

1055.* **M. punctatum** (Lin.) Hedwig. N. W. Himalaya, Sikkim, *Caucasus, N. and E. Asia, Europe, N. Am.* p. 417.

1055*a*. **M. vexense** Bescherelle. *Tonkin.*

Subseries : RHIZOGONIINEÆ.

Family : **DREPANOPHYLLACEÆ.**

Genus : **MNIOMALIA.**

1056.‡ **M. oppositifolia** (Mitten) Brotherus. Ceylon. p. 420.

1057. **M. semilimbata** (Mitten) C. Müller. *Sumatra, Borneo, New Guinea, Samoa.* p. 420.

Family : **RHIZOGONIACEÆ.**

Genus : **HYMENODON.**

1058. **H. sericeus** (Dozy et Molkenboer) C. Müller, *Java, Borneo.* p. 426.

Genus : **HYMENODONTOPSIS.**

1059. **H. Stresemannii** Herzog. *Ceram.* p. 427.

Genus : **RHIZOGONIUM.**

1060. **Rh. salakanum** Brotherus. *Java.* p. 428.

1061. **Rh. badakense** Fleischer. *W. Java.* p. 428.

1062.*†‡**Rh. spiniforme** (Lin.) Bruch. Nepal, Sikkim, Bhotan, Abor, Assam, Palnis, Anamalais, Ceylon, *Tonkin.* Tropics and Subtropics.

063. **Rh. longiflorum** (Mitten) Jæger. *Labuan.* p. 428.

064. **Rh. latifolium** Bryol. jav. Malacca, *Banca, Borneo.* p. 429.

Subseries : HYPNODENDRINEÆ.

Family : **HYPNODENDRACEÆ.**

Genus : **HYPNODENDRON.**

1065. **H. Reinwardtii** (Hornschuch) Lindberg. *Indian Archipelago, Ceram, New Guinea, Philippines, Fidji, Samoa.* p. 438.
1066. **H. macrocarpum** Herzog. *Ceram.* p. 438.
1067.‡ **H. arborescens** (Mitten) Lindberg. Ceylon, *Sumatra, Java, Celebes, New Guinea.* p. 438.
1068. **H. Beccarii** (Hampe) Jæger. *Borneo.* p. 438.
1069. **H. formosicum** Cardot. *Formosa, Philippines.* p. 438.
1070. **H. Junghuhnii** (C. Müller) Lindberg. *Sumatra, Java, Celebes.* p. 438.
1071. **H. diversifolium** Brotherus et Geheeb. *Ceram, New Guinea.* p. 438.
1072. **H. Macgregorii** Brotherus et Geheeb. *Ceram, New Guinea.* p. 438.
1073 .**H. gedehense** Fleischer. *Java.* II, p. 531.
1074. **H. microvagum** Fleischer. *Java.* II, p. 531.
1075. **H. pseudoarborescens.** Fleischer. *Borneo.* II, p. 531.
1076. **H. opacum** Fleischer. *Java.* II, p. 531.

Genus : **MNIODENDRON.**

1077.‡ **M. dettoideum** Thwaites et Mitten. Ceylon. p. 439.
1078.‡ **M. divaricatum** (Hornschuch et Reinwardt) Lindberg. Perak, *Sumatra, Java, Borneo, Celebes, New Guinea, Philippines.* p. 439.
1079. **M. humile** Lindberg. *Celebes.* p. 439.
1080. **M. brevifolium** (Mitten) Brotherus. *Borneo.* p. 439.
1081. **M. Mittenii** Salmon. *Borneo.* p. 439.
1082. **M. aristinerve** Mitten. *Borneo.* p. 439.
1083. **M. microloma** Mitten. *Sulu.* p. 439.
1084. **M. Korthalsii** Bryol. jav. *Sumatra, Java, Batjan, Ceram, Japan.* p. 439.

Subseries : BARTRAMIINEÆ.

Family : **AULACOMNIACEÆ.**

Genus : **AULACOMNIUM.**

1085.* **A. palustre** (Lin.) Schwægrichen. Baltistan, *C. Asia, N. Asia, Caucasus, Europe, N. Am., Austr.* p. 443.
1086. **A. turgidum** (Wahlenberg) Schwægrechen. *Arctica, Siberia, Japan, Europe, America, Kenia.* p. 443.

Family : **MEESEACEÆ.**

Genus : **AMBLYODON.**

1087. **A. dealbatus** (Dickson) Palisot. *C. Asia. Caucasus, Europe.* p. 444.

Genus : **MEESEA.**

1088.* **M. trichodes** (Lin.) Spruce. Himalaya : Sikkim, *C. Asia, Caucasus, Siberia, Europe.* p. 445.

Family : **BARTRAMIACEÆ.**

Genus : **PLAGIOPUS.**

1089.* **P. Oederi** (Gunner) Limpricht. Himalaya, *C. Asia, Siberia, Amur, Japan, Caucasus, Europe, N. Am.* p. 449.

1090. **P. javanicus** (Dozy et Molkenboer) Fleischer. *Java.* p. 449.

Genus : **BARTRAMIA.**

1091.* **B. norvegica** (Gunner) Lindberg. Kumaon, Sikkim, *Yünnan, Caucasus, Europe, Rocky Mountains.* p. 452.

1092.* **B. pomiformis** (Lin.) Hedwig. N. W. Himalaya, *Japan, Siberia, Caucasus, Europe, N. Am., New Zealand.* p. 452.

1093.* **B. viridissima** (Bridel) Kindberg. Himalaya : Sikkim, *C. Asia, Alps, N. W. Am.* p. 453.

1094.* **B. leptodonta** Wilson. N. W. Himalaya, Kumaon, Sikkim. p. 454.

1095.‡ **B. Schmidiana** C. Müller. Nilgiris. p. 454.

1096.* **B. subpellucida** Mitten. *Nepal,* Kumaon, Garhwal. p. 454.

1097. **B. ithyphylla** (Haller) Bridel. *Caucasus, Siberia, Kamtchatka, Europe, N. Am.* p. 454.

1098. **B. adpressa** Fleischer. *Java.* II, p. 531.

1099.‡ **B. ghatica** Cardot et Varde. S. India. II, p. 531.

1100. **B. madurensis** Dixon et Varde. S. India.

Genus : **BARTRAMIDULA.**

1101. **B. Wilsonii** Bryol. eur. *Yünnan, Europe, Fernando Po.* p. 460.

1102.*‡**B. Roylei** (Hooker fil.) Bryol. eur. Himalaya : Garhwal, Bhotan, Nilgiris, Ceylon. p. 460.

1103.‡ **B. dispersa** Cardot et Varde. S. India. II, p. 531.

Genus : **PHILONOTIS.**

1104.*† **Ph. Griffithiana** (Wilson) Mitten. N. W. Himalaya, Sikkim, Khasia, Tonkin. p. 461.

1105.* **Ph. Gammieana** Brotherus. Sikkim. p. 461.

1106. **Ph. Treubii** (Fleischer) Brotherus. *Java.* p. 461.

1107. **Ph. tjibotensis** (Fleischer) Brotherus. *Java.* p. 461.

1108. **Ph. rigida** Bridel. *Caucasus, Europe, Azores, Canary Isl., Madeira.* p. 461.

1109.* **Ph. glommerata** Mitten. Sikkim. p. 462.

1110.‡ **Ph. imbricatula** Mitten S. India, Ceylon. p. 462.

1111.‡ **Ph. heterophylla** Mitten. S. India, Ceylon. p. 462.

1112.‡ **Ph. laxissima** (C. Müller) Bryol. jav. S. India, *Java, St. Marie near Madagascar.* p. 463.

1113. **Ph. evaninervis** Fleischer. *Java.* p. 463.

1114‡. **Ph. secunda** (Dozy et Molkenbœr) Bryol. jav. S. India, *Java.* p. 464.

1115.‡ **Ph. angusta** Mitten. Ceylon. p. 464.

1116. **Ph. revoluta** Bryol. jav. *Java, Philippines, Tonkin.* p. 464.

1117.‡ **Ph. mollis** (Dozy et Molkenbœr) Bryol. jav. S. India : Kanara, Ceylon, Andamans, *Tonkin, Sumatra, Java.* p. 465.

1118.* **Ph. leptocarpa** Mitten. Sikkim. p. 465.

1119.*†‡**Ph. Turneriana** (Schwægrichen) Mitten. Simla, Kumaon, Nepal, Khasia, Ceylon, *Java, Japan, China, Sandwich Isl.* p. 465.

1120.*† **Ph. subulosa** (Griffith) Mitten. E. Himalaya, Khasia. p. 465.

1121.‡ **Ph. pseudofontana** (C. Müller) Jæger. Nilgiris. p. 465.

1122.*‡ **Ph. nitida** (Wilson) Mitten. N. W. Himalaya, Ceylon. p. 465.

1123.*† **Ph. speciosa** (Griffith) Mitten. Nepal, Abor, Khasia. p. 465.

1124. **Ph. Mercieri** Paris et Brotherus. *Tonkin.* p. 465.

1125.*‡ **Ph. falcata** (Hooker) Mitten. Tibet, N. W. Himalaya, Kumaon, Nepal, Sikkim, S. India, *Philippines, Japan, Tonkin, Korea, China.* p. 465.

1126.‡ **Ph. alpicola** Juratzka. S. India ? *C. Asia, Siberia, Europe.* p. 466.

1127.* **Ph. calcarea** (Bryol. eur.) Schimper. Tibet, N. W. Himalaya, *C. Asia, Caucasus, W. Asia, Europe, N. Afr.* p. 466.

1128.* **Ph. lutea** Mitten. Sikkim. p. 467.

1129.* **Ph. fontana** (Lin.) Bridel. Frontier Prov., Sikkim, N. W. Himalaya, Tibet, *C. and N. Asia, Persia, Caucasus, Europe, N. Afr.* p. 467.

1130.* **Ph. seriata** Mitten. Kashmir, N. W. Himalaya, *Europe, Greenland.* p. 467.

1131.* **Ph. longicollis** (Hampe) Mitten. (*See* No. 1072.) Sikkim, *Java.* p. 469.

1132. **Ph. curybrochis** Renauld et Cardot. *Java.* p. 469.
1133.‡ **Ph. subrigida** Cardot et Varde. S. India. II, p. 531.
1134.‡ **Ph. anisoclada** Cardot et Varde. form of *Ph. falcata.* S. India. II, p. 531.

Genus : **BREUTELIA.**

1135.‡ **B. dicranacea** (C. Müller) Mitten. Nilgiris, Ceylon. p. 474.
1136.‡ **B. indica** Mitten. Nilgiris. p. 474.
1137.* **B. deflexa** (Wilson) Brotherus. Sikkim, Bhotan. p. 474.
1138. **B. yunnanensis** Bescherelle. *Yünnan.* p. 474.
1139. **B. arundinifolia** (Duby) Fleischer. *Sumatra, Java, Celebes, Philippines.* p. 474.
1140.‡ **B. sclerodictya** Cardot et Varde. S. India. II, p. 532.

Genus : **FLEISCHEROBRYUM.**

1141.* **F. longicolle** (Hampe) Loeske. Sikkim. *Java, Yünnan.* II, p. 532.
1142. **F. eurybrochis** (Renauld et Cardot) Fleischer. *Java.* II, p. 532.

Family : **SPIRIDENTACEÆ.**

Genus : **SPIRIDENS.**

1143. **S. Reinwardti.** Nees. *Java, Celebes, Timor, New Guinea, Philippines.* p. 475.

Family : **TIMMIACEÆ.**

Genus : **TIMMIA.**

1144.* **T. Cavarica** Hessler. Kashmir, *C. Asia, Caucasus, Europe, N. Afr., Montana.* p. 478.
1145. **T. norwegica** Zetterstedt. *Caucasus, Siberia, Europe.* p. 478.
1146.* **T. austriaca** Hedwig. Tibet, Kashmir, *Yünnan, Siberia, Europe, N. Am.* p. 478.

Series : ISOBRYALES.

Subseries : ORTHOTRICHINEÆ.

Family : **ERPODIACEÆ.**

Genus : **ERPODIUM.**

1147.*‡**E. mangiferæ** C. Müller. India : W. Ghats, N. W. Himalaya, United Prov. II, p. 3.

Genus : **AULACOPILUM.**

1148.‡ **A. tumidulum** Thwaites et Mitten. Ceylon. II, p. 5.
1149.* **A. abbreviatum** Mitten. N. W. Himalaya. II, p. 5.

Genus : **SOLMSIELLA.**

1150.‡ **S. ceylonica** (Thwaites et Mitten) C. Müller. Ceylon. *Java.* II, p. 5.

Family : **PTYCHOMITRIUCEÆ.**

Genus : **PTYCHOMITRIUM.**

1151. **P. glyphomitrioides** (Bals. et De Notaris) Vent et Bott. Caucasus, Europe. II, p. 8.
1152.‡ **P. indicum** (Willdenow) Jæger. India. II, p. 9.
Europe. II, p. 8.
1153. **P. Tortula** (Harvey) Jæger. Himalaya, Nilgiris, *China.* II, p. 10.

Genus : **GLYPHOMITRIUM.**

1154.‡ **G. calycinum** (Mitten) Cardot. Ceylon. II, p. 10.
1154*a*. **G. Warburgii** Brotherus. *Yünnan, China.* II, p. 10.

Family : **ORTHOTRICHACEÆ.**

Genus : **ZYGODON.**

1155.‡ **Z. humilis** Thwaites et Mitten. Ceylon. II, p. 13.
1156. **Z. gracillimus** Brotherus. *Java, New Zealand, Bolivia.* II, p. 13.
1157.*‡**Z. obtusifolius** Hooker. Nepal, Sikkim, Ceylon. II, p. 13.
1158.‡ **Z. Reinwardtii** (Hornschuch) A. Braun. Ceylon, *Java.* II, p. 13.
1159.‡ **Z. cylindrocarpus** C. Müller. Nilgiris. II, p. 14.
1160.‡ **Z. tetragonostomus** R. Brown. S. India, Ceylon, *Java, Lombok.* II, p. 14.
1161. **Z. anomalus** Dozy et Molkenbœr. *Java, Tasmania, New Zealand.* II, p. 14.
1162.‡ **Z. polyptychus** Cardot. Madura. II, p. 14.
1163.‡ **Z. acutifolius** C. Müller. Nilgiris. II, p. 14.
1164. **Z. Stresemannii** Herzog. *Moluccas.* II, p. 14.
1165.‡ **Z. intermedius** Bryol. eur. Ceylon, *Java, Austr., New Zealand, Patagonia.* II, p. 15.
1166. **Z. pangerangense** Fleischer. *Java.* II, p. 15.

Genus : **RHACHITHECIUM.**

1167.‡ **Rh. perpusillum** (Thwaites et Mitten) Brotherus. Palni Hills, Ceylon. II, p. 17.

Genus : **ORTHOTRICHUM.**

1168.* **O. rupestre** Schbicher. Kashmir, *Caucasus, Europe, N. Afr., N. Am., Bolivia, New Zealand.* II, p. 17.

1169.* **O. anomalum** Hedwig. Tibet, *C. and W. Asia, Caucasus, Siberia, Europe, N. Afr., N. Am.* II, p. 17.

1170.* **O. cupulatum** Hoffmann. Kashmir (?), *C. and W. Asia, Caucasus, Europe, N. Afr., N. Am.* II, p. 17.

1171. **O. Limprichtii** Hagen. *Caucasus, Europe.* II, p. 17.

1172. **O. affine** Schrader. *Caucasus. Altai. E. Siberia, Kamtchatka, Europe, N. Afr., N. Am.* II. p. 18.

1173.* **O. fastigiatum** Bruch. Kashmir, *Europe, N. Afr.,* II, p. 18.

1174.* **O. speciosum** Nees. Tibet, Himalaya : Sikkim, *Caucasus, Siberia, Amur, Europe, N. Afr., N. Am.* II, p. 19.

1175. **O. Kiliasii** C. Müller. *Turkestan, Caucasus, Altai, E. Siberia, Europe, N. Am.* II, p. 19.

1176.* **O. Schlotthaueri** Venturi. Kashmir, *Rocky Mountains.* II, p. 19.

1177. **O. caucasicum** Venturi. *Caucasus.* II, p. 19.

1178.* **O. Hookeri** Mitten. Kumaon, Nepal, Sikkim, *Yünnan, Setchwan.* II, p. 19.

1179. **O. vladikavkanum** Venturi. *Caucasus.* II, p. 19.

1180.* **O. striatum** ((Lin.) Schwægrichen. Kashmir, *Talysh, Caucasus, Europe, N. Afr., N. Am.* II. p. 20.

1181. **O. Lyellii** Hooker et Taylor. *Caucasus, Europe, N. Afr., N. Am.* II, p. 20.

1182.* **O. crenulatum** Mitten. W. Tibet. II, p. 20.

1183. **O. microcarpum** De Notaris. *Caucasus, Europe.* II, p. 20.

1184. **O. pallens** Bruch. *Caucasus, Turkestan, Europe, N. Afr., N. Am.* II. p. 20.

1185.* **O. virens** Venturi. Kashmir. II, p. 20.

1186. **O. stramineum** Hornschuch. *Caucasus, Europe.* II, p. 20.

1187.* **O. alpestre** Hornschuch. Kashmir, *Alatau, Siberia, Europe, N. Am.* II, p. 21.

1188. **O. pumilum** Swartz. *Caucasus, Europe, Canary Isl.* II, p. 21.

1189. **O. Schimperi** Hammar. *Turkestan, Caucasus, Europe, N. Afr.,* II, p. 21.

1190. **O. Rogeri** Bridel. *Turkestan, Europe, N. Am.* II, p. 21.

1191.† **O. Griffithii** Mitten. India. II, p. 21.

1192. **O. diaphanum** (Gmelin) Schrader. *Siberia, Europe, N. Am.* II. p. 21.

Genus : **STRŒMIA.**

1193.* **S. obtusifolia** (Schrader) Hagen, W. Himalaya, *Siberia, Caucasus, Europe, N. Am.* II, p. 23.

1194. **S. gymnostoma** (Bruch) Hagen. *Japan, Europe, N. Am.* II, p. 23.

Genus : **ULOTA.**

1195. **U. ulophylla** (Ehrhard) Brotherus. *Caucasus, Amur, Sachalin, Europe, Canary Isl., N. Am.* II, p. 25.

1196. **U. crispula** Bruch. *Caucasus, Europe, N. Am.* II, p. 25.

1197. **U. Rehmanni** Juratzka. *Caucasus, Europe.* II, p. 25.

1198.* **U. robusta** Mitten. Sikkim, Bhotan. II, p. 25.

1199.‡ **U. Schmidii** (C. Müller) Jæger. Nilgiris. II, p. 25.

Genus : **DRUMMONDIA.**

1200.* **D. Thomsoni** Mitten. W. Tibet, W. Himalaya. II, p. 27.

1201.* **D. stricta** (Mitten) C. Müller. Sikkim. II, p. 27.

Genus : **MACROMITRIUM.**

1202.‡ **M. Perrottetii** C. Müller. Sikkim, S. India, Ceylon, *China.* II, p. 30.

1203.‡ **M. squarrosulum** C. Müller. Nilgiris. II, p. 30.

1204.‡ **M. minutum** Mitten. Ceylon, *Java.* II, p. 30.

1205. **M. micropoma** Fleischer. *Java.* II, p. 30.

1206.‡ **M. orthostichum** Nees. Malacca, *Java, Celebes, Luzon.* II, p. 31.

1207.‡ **M. seminudum** Thwaites et Mitten. Ceylon, *Celebes.* II p. 31.

1208. **M. appressifolium** Mitten. *Java.* II, p. 31.

1209. **M. recurvulum** Cardot. *Celebes.* II, p. 31.

1210. **M. Reinwardtii** Schwaegrichen. *Indian Archipelago, Philippines, Pacific Isl.* II, p. 32.

1211.‡ **M. fasciullare** Mitten. Ceylon. *Philippines.* II, p. 32.

1212. **M. Hallieri** Fleischer *Borneo.* II, p. 35.

1213.* **M. densum** Mitten. Nepal. II, p. 37.

1214. **M. incurvum** (Lindberg) Paris. *Tonkin, China, Japan.* II, p. 38.

1215.‡ **M. Japonicum** Dozy et Molkenboer. Madras, Ceylon, *China, Japan.* II, p. 38.

1216.‡ **M. assimile** Brotherus et Dixon. Ceylon. II, p. 38.

1217. **M. Merrillii** Brotherus. *Borneo, Philippines.* II, p. 38.

1218. **M. Winkleri** Brotherus. *Borneo.* II, p. 38.

219.*‡**M. nepalense** (Hooker et Geville) Schwægrichen. Nepal, Sikkim, S. India, Malacca, *China, Philippines* II, p. 38.

1220.† **M. assamicum** (Griffith) Mitten, Assam. II, p. 38.
1221.‡ **M. calympercoideum** Mitten. Malacca. II, p. 38.
1222. **M. laosianum** Paris et Brotherus. *Indochina.* II, p. 38.
1223.*†**M. Moorcroftii** (Hooker et Greville) Schwægrichen. Nepal, Sikkim, Khasia, Burma, *Yünnan.* II, p. 38.
1224. **M. annamense** Brotherus et Paris. *Annam.* II, p. 38.
1225. **M. Formosæ** Cardot. *Formosa.* II, p 39.
1226.‡ **M. Schmidii** C. Müller. S. India, Ceylon. II, p. 39.
1227. **M. tylostomum** Mitten. *Java.* II, p. 39.
1228. **M. Blumei** Nees. *Indian Archipelago, Philippines.* II, p. 40.
1229.‡ **M. contortum** Thwaites et Mitten. Ceylon. II, p. 40.
1230. **M. concinnum** Mitten. *Java,* Lombok, *Annam.* II, p. 40.
1231. **M. Zollingeri** Mitten. *Java, Lombok, Annam.* II, p. 40.
1232. **M. Lauterbachi** Brotherus. *Java, Lombok, Annam.* II, p. 40.
1233. **M. elongatum** Dozy et Molkenboer. *Java.* II, p. 40.
1234. **M. humile** Bryol. jav. *Java, New Guinea.* II, p. 40.
1235. **M. subuligerum** (Bryol. jav.) Fleischer. *Java, Celebes, Philippines, Tahiti.* II, p. 40.
1236.‡ **M. nigricans** Mitten. Coorg. II, p. 41.
1237. **M. salakanum** C. Müller. *Java, Philippines, New Caledonia.* II, p. 41.
1238. **M. pungens** (Mitten) Fleischer. *Java.* II, p. 41.
1239. **M. celebense** (Paris) Fleischer. *Java, Celebes, Philippines.* II, p. 41.
1240. **M. incurvifolium** (Hooker et Greville) Schrwægrichen. *Amboina, Ternate.* II, p. 41.
1241. **M. Miquelü** Mitten. *Java.* II, p. 41.
1242. **M. angustifolium** Dozy et Molkenboer. *Sumatra, Java, Celebes, Lombok, Amboina, Borneo, Luzon.* II, p. 41.
1243. **M. semipellucidum** Dozy et Molkenboer. *Sumatra, Borneo, Philippines, New Guinea.* II, p. 41.
1244.‡ **M. glaucum** Mitten. Ceylon, *Samoa.* II, p. 41.
1245. **M. Braunü** C. Müller. *Java.* II, p. 41.
1246. **M. cuspidatum** Hampe. *Sumatra, Borneo, Philippines.* II, p. 41.
1247. **M. longicaule** C. Müller. *Java, Philippines.* II, p. 41.
1248. **M. aurantiacum** Paris et Brotherus. *Annam.* II, p. 43.
1249. **M. leptocarpum** Brotherus. W. Ghats. II, p. 43.
1250. **M. ochraceum** (Dozy et Molkenboer) C. Müller. *Sumatra, Java, Philippines.* II, p. 43.
1251. **M. longipilum** A. Braun. *Java.* II, p. 43.
1252.‡ **M. sulcatum** (Hooker et Greville) Bridel. S. India, Ceylon, Malacca, *Borneo, Philippines.* II, p. 43.
1253.‡ **M. ellipticum** Hampe. Ceylon. II, p. 43.
1254.‡ **M. ceylanicum** Mitten. Ceylon. II, p. 43.

1255.‡ **M. nilgirense** C. Müller. Nilgiris. II, p. 44.
1256.‡ **M. fulvum** Mitten. Ceylon. II, p. 44.
1257. **M. lorifolium** Paris et Brotherus. *Annam.* II, p. 44.
1258.‡ **M. uncinatum** C. Müller. Nilgiris. II, p. 44.
1259.‡ **M. himalayanum** Dixon. Garhwal.
1260.‡ **M. angulosum** Thwaites et Mitten. Ceylon.
1261.‡ **M. hispidulum** Thwaites et Mitten. Ceylon.
1262.‡ **M. lingulatum** Cardot et Varde. S. India. II, p. 532.
1263.‡ **M. magnirete** Dixon. Malacca. II, p. 532.
‡ **M. polygonostomum** Dixon et Varde. Sirumalai.

Genus : **MICROMITRIUM.**

1264.†‡ **M. goniorrhynchum** (Dozy et Molkenboer) Jaeger. Khasia, Andamans, *Indian Archipelago, New Guinea, Philippines, Annam.* II, p. 45.
1265. **M. macrorrhynihum** (Mitten) Paris. *Java.* II, p. 45.

Genus : **SCHLOTHEIMIA.**

1266. **S. Faureii** Cardot. *Formosa.* II, p. 47.
1267 †‡ **S. Grevilleana** Mitten. Assam, Khasia, S. India, Ceylon, *Java, S. Africa.* II, p. 47.
1268. **S. rubiginosa** Wright. *Borneo.* II, p. 48.

Genus : **DESMOTHECA.**

1269. **D. apiculata** (Dozy et Molkenboer) Lindberg. *Sumatra, Java, Amboina.* II, p. 49.
1270.‡ **D. cuspidata** (C. Müller) Paris. *Andamans.* II, p. 49.

Family : **RHACOPILACEÆ.**

Genus : **RHACOPILUM.**

1271.*†‡ **Rh. orthocarpum** Wilson. Nepal, Sikkim, Khasia, S. India, Burma. II, p. 52.
1272. **Rh. demissum** Bryol. jav. *Java, Borneo, Celebes, New Caledonia.* II, p. 52.
1273. **Rh. aristatum** Mitten. Formosa, Japan. II, p. 52.
1274.‡ **Rh. Schmidü** (C. Müller) Jæger. Nilgiris, Palnis, Sirumalai, *Tonkin.* II, p. 52.
1275.‡ **Rh. indicum** Mitten. Ceylon, *Philippines.* II, p. 52.
1276. **Rh. pacificum** Bescherelle. *Java, Bali, Ceram, Celebes, New Caledonia, Samoa, Tahiti.* II, p. 52

1277. **Rh. spectabile** Reinwardt et Hornschuch. *Sumatra, Java, New Guinea, Philippines, New Caledonia, New Pommern, New Hebrides, Fidji, Samoa.* II p. 53.

1278. **Rh. epiphyllosum** Fleischer. *Java.* II p. 53.

Subseries : FONTINELLINEÆ.

Family : **FONTINELLACEÆ.**

Genus : **FONTINALIS.**

1279. **F. antipyretica** Lin. *C. and N. Asia, Caucasus, Europe, N. Afr., N. Am.* II p. 58.

Family : **CLIMARIACEÆ.**

Genus : **CLIMACIUM.**

1280. **C. dendroides** (Dillenius) Weber et Mohr. *C. and N. Asia, Caucasus, China, Japan, Europe, N. Am.* II p. 65.

1281.* **C. japonicum** Lindberg. Tibet, *E. China, Japan.* II p. 65.

Subseries : LEUCODONTINEÆ.

Family : **HEDWIGIACEÆ.**

Genus : **HEDWIGIA.**

1282.* **H. ulbicans** (Weber) Lindberg. N. W. Himalaya, *C. Asia, Caucasus, Korea, Japan, Siberia, Europe, Afr., Am.* II p. 68.

Genus : **HEDWIGIDIUM.**

1283.‡ **H. imberbe** (Smith) Bryol. eur. Ceylon, Austr., Afr., Europe.

Genus : **BRAUNIA.**

1284.* **B. attenuata** (Mitten) Jæger. Kumaon. II p. 71.

1285.‡ **B. secunda** (Hooker) Bryol. eur. (*including B. indica and B. macropelma*). S. India : *E. and C. Africa, Mexico, S. Am.* II p. 71.

1286. **B. obtusicuspis** Brotherus. *Setchwan.* II p. 72.

1286a. **B. Delavayi** Bescherelle. *Yunnan.* II p. 72.

Genus : **CLEISTOSTOMA.**

1287.*† **C. ambigua** (Hooker) Bridel. Kumaon, Nepal, Sikkim, Bhotan, Assam, Burma, *Siam, Yünnan.* II p. 73.

Family : **CRYPHÆACEÆ.**

Genus : **ACROCRYPHÆA.**

1288. *†‡ **A. concavifolia** (Griffith) Bryol. jav. Nepal, Assam, S. India, Ceylon, *Java, Celebes.* II p. 77.

Genus : **CRYPHAEA.**

1288a. **C. Henryi** Thériot. *Tonkin.*

Genus : **SPHÆROTHECIELLA.**

1289.* **S. sphaerocarpa** (Hooker) Fleischer. Nepal, Sikkim, *Yünnan, China.* II p. 81.

Genus : **PILOTRICHOPSIS.**

1290. **P. dentata** (Mitten) Bescherelle. *Formosa, China, Japan.* II p. 86.

1291.‡ **P. ferruginea** (Mitten) Brotherus. Nilgiris. II p. 86.

Genus : **FORSSTROEMIA.**

1292.‡ **F. inclusa** Cardot et Dixon. Assam. II p. 88.

1293.* **F. mussooriensis** Dixon. Garhwal.

1294.*‡ **F. indica** (Montagne) Paris. N. W. Himalaya, S. India. II p. 88.

Family : **LEUCODONTACEÆ.**

Genus : **LEUCODON.**

1295. **L. immersus** Lindberg. *Talysh, Caucasus.* II p. 92.

1296.* **L. sciuroides** (Lin.) Schwægrichen. Kashmir, N. W. Himalaya, *C. Asia, Kurdistan, Caucasus, Siberia, Europe, N. Afr., N. Am.* II p. 92.

1297.* **L. secundus** (Harvey) Mitten. W. Tibet, Simla, Kumaon, Nepal, Sikkim, *Yünnan.* II p. 93.

1298. **L. flagellaris** (Lindb.) Brotherus. *Caucasus.* II p. 92.

Genus : **ANTITRICHIA.**

1299. **A. curtipendula** (Hedwig) Bridel. *Caucasus, Europe, Afr., N. Am.* II p. 98.

Family : **CYRTOPODACEÆ.**

Genus : **BESCHERELLEA.**

1300. **B. Cyrtopus** F. Müller. *Moluccas, New Guinea, Austr.* II p. 100.

Family : **PTYCHOMNIACEÆ.**

Genus : **HAMPEELLA.**

1301. **H. pallens** (Lacoste) Fleischer. *Java, Queensland, E. Austr., New Guinea.* II p. 104.

Genus : **GLYPTOTHECIUM.**

1302.‡ **G. sciuroides** (Hooker) Hampe, Ceylon, *Java, New Guinea, Austr., New Zealand.* II p. 105.

1303. **G. pangerangense** Fleischer. *Java.* II p. 105.

Family : **PRIODONTACEÆ.**

Genus : **NEOLINDBERGIA.**

1304. **N. rugosa** (Montagne) Fleischer. *Celebes, Philippines.* II p. 115.

1305. **N. Deningeri** Herzog. *Buru* (*Moluccas*). II p. 115.

1306. **N. rigida** (Bryol. jav.) Fleischer. *Sumatra.* II p. 115.

Family : **TRACHYPODACEÆ.**

Genus : **DIAPHANODON.**

1307* **D. blandus** (Harvey) Renauld et Cardot. Sikkim, Ceylon. II p. 118.

1308.‡ **D. javanicus** Renauld et Cardot. Ceylon, *Java, Borneo, Ceram, Halmahera.* II p. 118.

1309.* **D. thuidioides**, Renauld et Cardot. N. W. Himalaya, Sikkim. II p. 118.

1310.* **D. Brotheri** Renauld et Cardot. Sikkim. II p. 118.

1311.‡ **D. procumbens** (C. Müller) Renauld et Cardot. India. II p. 118.

Genus : **TRACHYPUS.**

1312.‡ **T. Massarti** Renauld et Cardot. S. India, Ceylon, *Java.* II p. 119.

1313.‡ **T. tenerrimus** Brotherus. Ceylon. II p. 119.

1314. **T. humilis** Lindberg. *Formosa, China, Korea, Japan, Luzon.* II p. 119.

1315.*‡ **T. vicolor** Reinwardt et Hornschuch. Sikkim, S. India, Ceylon, *Java, Philippines, Japan, Formosa, China.* II p. 119.

1316. **T. Nietneri** (C. Müller) Paris. Ceylon. II p. 119.

1317. **T. appressus** Fleischer. *Java.* II p. 119.

1318. **T. cuspidatus** Fleischer. *Java, Borneo.* II p. 119.

1319. **T. baviensis** Bescherelle. *Tonkin.* II p. 119.

Genus : **PSEUDOSPIRIDENTOPSIS.**

1320.* **P. horrida** (Mitten) Fleischer. Bhotan, *Formosa, Philippines.* II p. 120.

Genus : **TRACHYPODOPSIS.**

1321.* **T. declinata** (Mitten) Fleischer. W. Himalaya, Nepal, *Java.* II p. 121.

1322.*†‡ **T. crispatula** (Kooker) Fleischer. Nepal, Sikkim, Bhotan, Abor, Khasia, Assam, Burma, Andamans, S. India, Ceylon, *Halmahera, Philippines, China, Yünnan.* II p. 12.

1323.‡ **T. himanthophylla** (C. Müller) Fleischer. N. W. Himalaya, Sikkim, Bhotan. II p. 121.

1324. **T. macrodon** Fleischer. *Java.* II p. 121.

1325.* **T. auriculata** (Mitten) Fleischer. Sikkim, Bhotan, *Formosa.* II p. 122.

Genus : **DUTHIELLA.**

1326.* **D. Wallichii** (Hooker) C. Müller. N. W. Himalaya, Kumaon, Nepal. II p. 123.

1327. **D. flaccida** (Cardot) Brotherus. *Formosa.* II p. 123.

Family : **MYURIACEÆ.**

Genus : **MYURIUM.**

1328†* **M. rufescens** (Reinwardt et Hornschuch) Fleischer. Khasia, S. India, Ceylon, Malacca, *Sumatra, Java, Lombok, Amboina, Celebes, Philippines, New Caledonia, Austr.* II p. 124.

1329.‡ **M. Warburgii** (C. Müller) Fleischer. S. India, Ceylon. II p. 124.

1330.‡ **M. perplexum** (Renauld et Cardot) Brotherus. Sikkim. II p. 124.

1331.‡ **M. subnitens** Dixon. Malacca. II p. 532.

Genus : **PILOECIUM.**

1332.‡ **P. pseudorufescens** (Hampe) C. Müller. Malacca, *Sumatra, Borneo, Philippines, New Guinea.* II p. 123.

Family : **PTEROBRYACEÆ.**

Genus : **TRACHYLOMA.**

1333.‡ **T. indicum** Mitten. Ceylon, *Sumatra, Java, Borneo, Ceram, Lombok, New Guinea, Annam.* II p. 129.

1334.‡ **T. tahitense** Bescherelle. Ceylon, *Java, Lombok, New Guinea, New Caledonia, Tahiti.* II p. 129.

Genus : **PENZIGIELLA.**

1335.†* **P. cordata** (Harvey) Fleischer. N. W. Himalaya, Sikkim, Nepal, Khasia. II p. 130.

Genus : **OSTERWALDIELLA.**

1336.* **O. monosticta** (Brotherus) Fleischer. Sikkim. II p. 131.

Genus : **ENDOTRICHELLA.**

1337.‡ **E. laevifolia** (Thwaites et Mitten) Brotherus. Ceylon. II p. 133.
1338. **E. Robinsonii** Brotherus. *Amboina.* II p. 133.
1339. **E. compressa** (Mitten) Brotherus. *Borneo.* II p. 133.
1340. **E. lanceolata** (Wright) Brotherus. *Borneo.* II p. 133.
1341. **E. Boutani** Brotherus et Paris. *Laos.* II p. 133.
1342. **E. alaris** Brotherus. *Amboina.* II p. 133.
1343. **E. Fauriei** (Paris et Brotherus) Brotherus. *Formosa, Japan.* II p. 133.
1344. **E. fragarioides** Paris *Tonkin.* II p. 133.
1345. **E. Pollaneana** Thériot et Varde. *Annam.* II p. 133.
1346.‡ **E. elegans** (Dozy et Molkenboer) Fleischer. Malacca, *Indian Archipelago, Annam, Formosa, Philippines.* II p. 133.
1347. **E. moluccensis** (E. Müller) Jaeger. *Ceram.* II p. 133.
1348. **E. secunda** Herrog. *Ceram.* II p. 133.
1349. **E. Eberhardtii** Brotherus et Paris. *Annam.* II p. 133.
1350.‡ **E. planomarginata** Dixon. Malacca, *Borneo.* II p. 532.

Genus : **GAROVAGLIA.**

1351. **G. tortifolia** Mitten. *Borneo.* II p. 135.
1352. **G. aristata** Bryol. jav. *Bima.* II p. 135.
1353. **G. latifolia** Brotherus et Paris. *Annam, Tonkin.* II p. 135.
1354. **G. caudata** C. Müller. *Sumbava.* II p. 135.
1355.‡ **G. oblusifolia** Thwaites et Mitten. Ceylon. II p. 135.
1356.‡ **G. densifolia** Thwaites et Mitten. Ceylon. II p. 135.
1357. **G. splendida** Fleischer. *Java.* II p. 135.
1358.‡ **G. plicata** (Nees) Endlicher. Sikkim, *Sumatra, Java, Ceram, Philippines.* II p. 135.
1359. **G. spinifera** Thériot et Varde. *Annam.* II p. 135.
1360. **G. bogoriensis** Fleischer. *Java.* II p. 135.
1361. **G. undulata** Renauld et Cardot. *Java.* II p. 136.
1362. **G. plumosa** Herzog. *Ceram.* II p. 136.

Genus : **JÆGERINA.**

1363.‡ **J. stolonifera** C. Müller, *var. incrassata* Varde Palnis. II p. 138.

Genus : **PTEROBRYOPSIS.**

1363a.‡ **P. crassicaulis** (C. Müller) Fleischer. Ceylon, *Java, Luzon.* II p. 140.
1364. **P. crassiuscula** (Cardot) Brotherus. *Formosa.* II p. 140.
1365. **P. cucullatifolia** Okamura. *Formosa.* II p. 140.
1366. **P. subcrassiuscula** Brotherus et Paris. *Tonkin.* II p. 140.
1367. **P. gedehensis** Fleischer. *Java.* II p. 140.
1368. ‡**P. aurantia** (C. Müller) Fleischer. Ceylon. II p. 140.
1369.*† **P. acuminata** (Hooker) Fleischer. Nepal, Sikkim, Khasia, Burma, Nilgiris. II p. 140.
1370.‡ **P. dendudata** Dixon et Varde. S. India. II p. 140.
1371. **P. Handelii** Brotherus. **Setchwan.** II p. 140.
1372.‡ **P. conchophylla** (Renauld et Cardot). Brotherus. Sikkim. II p. 140.
1373.‡ **P. flexipes** (Mitten) Fleischer. Nilgiris, Ceylon. II p. 140.
1374.‡ **P. Schmidii** (C. Müller) Fleischer. Palni Hills, Nilgiris, Ceylon. II p. 140.
1375.‡ **P. Kegeliana** (C. Müller) Fleischer. Bombay. II p. 140.
1376.‡ **P. Walkeri** Brotherus. S. India. II p. 140.
1377.‡ **P. scabriuscula** (Mitten) Fleischer. S. India. II p. 140.
1378.‡ **P. madurensis** Cardot et Varde. S. India. II p. 141.
1379.*†‡ **P. orientalis** (C. Müller) Fleischer. Himalaya : Sikkim, Assam, S. India. II p. 141.
1380.* **P. gracilis** Brotherus. S. India. II p. 141.
1381.* **P. kanarensis** Cardot et Dixon. Bombay Presidency. II p. 141.
1382.* **P. frondosa** (Mitten) Fleischer. S. India, Ceylon. II p. 141.
1383. **P. yunnanensis** Brotherus. *Yünnan.* II p. 141.
1384. **P. setchwanica** Brotherus. *Setshwan.* II p. 141.
1385.* **P. breviflagellosa** (C. Müller) Fleischer. Sikkim, Burma. II p. 141.
1386.‡ **P. Maxwellii,** Cardot et Dixon. S. India : Karwar.
1387.‡ **P. Wightii** (Mitten) Brotherus. Ceylon.

Genus : **SYMPHYSODON.**

1388. **S. neckeroides** Dozy et Molkenboer. *Sumatra, Java, Borneo, Panay, New Caledonia.* II p. 143.
1389. **S. splendens** (Hornschuch et Reinwardt) Brotherus. *Java, New Guinea.* II p. 143.

Genus : **SYMPHYSODONTELLA.**

1390. **S. convoluta** (Dozy et Molkenboer) Fleischer. *Java, New Guinea.* II p. 144.

1391. **S. cylindracea** (Montagne) Fleischer. *Sumatra, Java, Philippines, New Caledonia, Samoa.* II p. 144.
1392. **S. scaphidiophylla** (Cardot) Brotherus. *Celebes.* II p. 144.
1393.‡ **S. involuta** (Mitten) Fleischer. S. India, Ceylon. II p. 144.
1394. **S. attenuatula** Fleischer. *Java, Philippines.* II p. 144.

Family : **METEORIACEÆ.**

Genus : **PAPILLARIA.**

1395.*†‡ **P. fuscescens** (Hooker) Jæger. Nepal, Sikkim, Bhotan, Khasia, Burma, Nilgiris, Palnis, Coorg, Ceylon, *Indian Archipelago, Philippines, Siam, Tonkin, Yünnan.* II p. 162.
1396.*†‡ **P. Feæ** C. Müller. Sikkim, Burma, Ceylon. II p. 162.
1397.*†‡ **P. chrysoclada** (C. Müller) Jæger. Sikkim, Ceylon. II p. 162.
1398.*†‡ **P. semitorta** (C. Müller) Jæger, N. W. Himalaya. Nepal, Sikkim, Bhotan, Khasia, Burma, Ceylon, *Java, Celebes, Ternate.* II p. 162.
1399.* **P. fuscata** Renauld et Cardot. Sikkim. II p. 162.
1400. **P. subangstrœmiana** Fleischer. *Java.* II p. 163.
1401.‡ **P. cuspidifera** (Taylor) Jæger—
P. crocea (Hampe) Jæger. S. India, Ceylon. II p. 163.
1402. **P. leuconeura** (C. Müller) Jæger. *Sumatra, Java, Celebes, Ceram, Halmahira.* II p. 164.

Genus : **METEORIUM.**

1403.** **M. Buchanani** (Bridel) Brotherus. N. W. Himalaya, Garhwal, Nilgiris, Palnis, Ceylon, *Yünnan.* II p. 165.
1404.† **M. lonchotrichum** (C. Müller) Brotherus. S. Shan States, *Bolivia.* II p. 165.
1405.* **M. Miguelianum** (C. Müller) Fleischer. Nilgiris, Ceylon, *Indian Archipelago, New Guinea, Japan, China.* II p. 165.
1406.* **M. brevirameum** (C. Müller) Brotherus. Nilgiri. II p. 165.
1407.* **M. ustulatum** Boswell. Ceylon. II p. 165.
1408.* **M. chrysocladum** (C. Müller) Brotherus. Ceylon. II p. 165.
1409. **M. helminthocladum** (C. Müller) Fleischer. *Formosa, China, Japan.* II p. 165.

Genus : **AEROBRYOPSIS.**

1410.†**A. membranacea** (Mitten) Brotherus. Assam, Abor. II p. 165.
1411. **A. subleptostigmata** Brotherus et Paris. *Annam.* II p. 165.
1412. **A. leptostigmata** Fleischer. *Java, New Guinea, Tonkin* II p. 165.
1413. **A. denexa** Brotherus et Paris. *Annam.* II p. 165.

1414. **A. assimilis** (Cardot) Brotherus. *Formosa, China, Japan.* II p. 165.
1415.*‡ **A. Wallichii** (De Candolle) Fleischer. Nepal, Ceylon. II p. 165.
1416. **A. subdivergens** Brotherus. *Tonkin, Formosa, China, Japan.* II p. 166.
1417. **A. hokinensis** (Bescherelle) Brotherus. *Yünnan.* II p. 166.
1418.*‡ **A. longissima** (Dozy et Molkenboer) Fleischer. Sikkim, S. India, Ceylon, Malacca, *Indian Archipelago, New Guinea, Carolines, Philippines, Hongkong, Tonkin, Yünnan.* II p. 166.
1418. **A. lanosa** (Mitten) Brotherus. Sikkim, Ceylon, Sumatra, *Philippines, Tonkin, Hongkong.*
1419. **A. Parisii** (Cardot) Brotherus. *Formosa, Japan.* II p. 166.
1420. **A. laosiensis** Brotherus et Paris. *Laos.* II p. 166.
1421. **A. integrifolia** (Bescherelle) Brotherus. *Yünnan.* II p. 166.

Genus: **AEROBRYIDIUM.**

1422.‡ **A. attenuatum** (Thwaites et Mitten) Fleischer. Ceylon. II p. 167.
1423. **A. phymatodes** (Bescherelle) Brotherus. *Tonkin.* II p. 167.
1424.† **A. undulatum** Fleischer. Shan States. II p. 167.
1425.*†‡ **A. auronitens** (Hooker) Brotherus. N. W. Himalaya, Nepal, Sikkim, Khasia, Nilgiris. II p. 167.
1426.*‡ **A. filamentosum** (Hooker) Fleischer. Nepal, Sikkim, Bhotan, Burma, Nilgiris, Yünan, Setchwan. II p. 167.
1427.*‡ **A. punctulatum** (C. Müller) Dixon. Sikkim, Nilgiris, Palnis, Ceylon. II p. 167.

Genus: **BARBELLA.**

1428.* **B. Stevensii** (Renauld et Cardot) Fleischer. Sikkim, Kurseong, Darjiling. II p. 168.
1429.‡ **B. rufifolia** (Thwaites et Mitten) Brotherus. Kanara, Ceylon. II p. 168.
1430.‡ **B. amœna** (Thwaites et Mitten) Fleischer. Ceylon. II p. 168.
1431. **B. Koningsbergeri** Fleischer. *Java.* II p. 168.
1432.*†‡ **B. comes** (Griffith) Brotherus. Sikkim, Khasia, Ceylon, *Java, Sumatra.* II p. 168.
1433.‡ **B. tenax** (C. Müller) Brotherus. S. India, Ceylon. II p. 168.
1434. **B. Kurzii** (Bryol. jav.) Fleischer. *Java.* II p. 168.
1435.* **B. compressiramea** (Renauld et Cardot) Fleischer. N. W. Himalaya, Nepal, Sikkim, Darjiling, Kurseong. II p. 168.
1436.*‡ **B. bombycina** (Renauld et Cardot) Fleischer. Himalaya: Sikkim, Kurseong, Ceylon. II p. 168.

1437.* **B. Levieri** (Renauld et Cardot) Fleischer. Himalaya: Sikkim, *Formosa, Japan.* II p. 168.
1438.*†‡ **B. spiculata** (Mitten) Brotherus. Sikkim, Khasia, Ceylon. II p. 169.
1439. **B. subpiculata** Brotherus et Paris. *Tonkin.* II p. 169.
1440.‡ **B. convolvens** (Mitten) Brotherus. Malabar, Mysore, Ceylon. II p. 169.
1441.‡ **B. phyllogonioides** (C. Müller) Brotherus. Ceylon. II p. 169.
1442.* **B. javanica** (Bryol. ja.) Brotherus. Ceylon, *Java.* II p. 169.
1443.†‡ **B. enervis** (Mitten) Fleischer. Abor, Ceylon, *Philippines, Austr., New Caledonia.* II p. 169.
1444. **B. chlorodiclados** Fleischer. *Java.* II p. 169.
1445. **B. subulifera** Fleischer. *Java.* II p. 169.
1446. **B. trichodes** Fleischer. *Java.* II p. 169.
1447.*‡ **B Determesii** (Renauld et Cordot) Fleischer. Himalaya, S. India: Madura, *Japan.* II p. 169.
1448.‡ **B. pendula** (Sullivant) Fleischer. S. India, Ceylon, *Sumatra, Java, Formosa, China, Japan, N. Am.* II p. 169.
1449.‡ **B. Questei** Cardot et Dixon. S. India: Madura.

Genus: **FLORIBUNDARIA.**

1450. **F. pseudofloribunda** Fleischer. *Java, New Guinea, New Hebrides, Queensland.* II p. 170.
1451.‡ **F. thuidioides** Fleischer. S. India, *Java, Philippines.* II p. 170.
1452.* **F. Walkeri** (Renauld et Cardot) Brotherus. E. Himalaya. II p. 170.
1453.* **F. Emodi** C. Müller. Himalaya. II p. 170.
1454.*†‡ **F. floribunda** (Dozy et Molkenboer) Fleischer. Himalaya, Abor, Burma, S. India, Ceylon, *Indian Archipelago, New Guinea, Polinesia, Philippines, Tonkin, Madagascar, S. and E. Africa.* II p. 170.
1455.*† **F. aurea** (Griffith) Brotherus. Himalaya: Sikkim, Bhotan, Khasia, *Java, Celebes, Ceram, Japan, Tonkin.* II p. 170.
1456.*‡ **F. sparsa** (Mitten) Brotherus. Himalaya, Sikkim, Bhotan, S. India. II p. 170.
1457.* **F. commutata** (Mitten) Brotherus. Himalaya: Sikkim. II p. 170.
1458.* **F. chloronema** (C. Müller) *probably identical with F. sparsa.* Brotherus. Himalaya: Nepal, Sikkim. II p. 170.
1459.* **F. chrysonema** (C. Müller) Brotherus. Sikkim, Darjiling Distr. II p. 170.
1460.* **F. leptonema** (C. Müller) Brotherus. Himalaya. II p. 170.
1461. **F. lombokensis** Brotherus. *Lombok.* II p. 170.

Genus : **CHRYSOCLADIUM.**

1462.* **Ch. retrorsum** (Mitten) Fleischer. Ceylon, *Formosa, Japan.* II p. 171.
1463. **Ch. pensile** (Mitten) Fleischer. *Formasa, Japan.* II p. 171.
1464.* **Ch. phæum** (Mitten) Fleischer. Sikkim. II p. 171.
1465.* **Ch. tumidoaureum** (C. Müller) Fleischer. Sikkim. II p. 171.
1466.* **Ch. flasnmeum** (Mitten) Fleischer. Sikkim. II p. 171.
1467.* **Ch. infuseatum** (Mitten) Fleischer. Sikkim. II p. 171.

Genus : **METEORIELLA.**

1468.* **M. soluta** (Mitten) Okamura. Sikkim, *Japan.* II p. 172.
1469. **M. cuspidata** Okamura. *Formosa.* II p. 172.

Genus : **METEORIOPSIS.**

1470. **M. javensis** Fleischer. *Java.* II p. 172.
1471.*‡ **M. reclinata** (C. Müller) Fleischer. Garhwal, S. India, Ceylon, *Java, Celebes, Philippines, Formosa.* II p. 173.
1472.*† **M. ancistrodes** (Renauld et Cardot) Brotherus. N. W. Himalaya : Garhwal, Burma, *Formosa.* II p. 173.
1473.*†‡ **M. squarrosa** (Hooker) Fleischer. N. W. Himalaya, Nepal, Abor, Khasia, S. India, Ceylon, Burma, Malacca, *Sumatra, Java.* II p. 173.
1474.*† **M. divergens** (Mitten) Brotherus. Sikkim, Khasia. II p. 173.
1475. **M. Balansæanum** Bescherelle. *Tonkin.* II p. 173.

Genus : **AËROBRYUM.**

1476.*†‡ **A. speciosum** Dozy et Molkenboer. Sikkim, Bhotan, Khasia, Ceylon, *Java, Amboina, Celebes, Philippines, Tonkin, China.* II p. 174.
1477.‡ **A. Willisii** Fleischer. Ceylon. II p. 174.

Subseries : NECKERINEÆ.

Family : **PHYLLOGONIACEÆ.**

Genus : **ORTHORRHYNCHIUM.**

1478.‡ **O. Nietneri** C. Müller. Ceylon. II p. 177.

Family : **NECKERACEÆ.**

Genus : **CRYPTOLEPTODON.**

1479.* **C. flexuosus** (Harvey) Renauld et Cardot. Garhwal, Nepal, Bhotan. II p. 181.

1480.* **C. rigidus** (Mitten) Brotherus. Kashmir. II p. 181.
1481.‡ **C. Pluvini** (Bridel) Brotherus. India. II p. 181.

Genus : **CALYPTOTHECIUM.**

1482.* **C. crispulum** (Bryol. jav.) Brotherus. Nepal, *Sumatra, Java, Philippines.* II p. 182.
1483. **C. subcrispulum** Brotherus. *Java, Lombok.* II p. 182.
1484. **C. extensum** Fleischer. *Java.* II p. 183.
1485.*‡ **C. tumidum** (Dickson) Fleischer. Nepal, S. India, Ceylon, *Indian Archipelago, New Guinea, Philippines, Yünnan, China, Samoa.* II p. 183.
1486.* **C. Hookeri** (Mitten) Brotherus. N. W. and E. Himalaya. *Yünnan.* II p. 183.
1487.*† **C. nitidum** (Mitten) Brotherus. Sikkim, Khasia II p. 183.
1488.* **C. biplicatum** C. Müller. Sikkim. II p. 183.
1489.*†‡ **C. Wightii** (Mitten) Fleischer. Nepal, Burma, Ceylon. II p. 184.
1490.† **C. nematosum** (C. Müller) Fleischer. Assam, Burma. II p. 184.
1491.‡ **C. patulum** (Brotherus) Fleischer. S. India. II p. 184.
1492. **C. subacuminatum** (Brotherus et Paris) Brotherus. *Laos, Yünnan.* II p. 184.
1493. **C. formosanum** Brotherus. *Formosa.* II p. 184.
1494.‡ **C. oxyphyllum** Dixon et Varde. S. India.
1495. **C. symphysodontoides** Dixon et Varde. S India.

Genus : **NECKERA.**

1496. **N. æqualifolia** C. Müller. Nilgiris. II p. 185.
1497.* **N. pennata** (Lin.) Hedwig. Kashmir, *Yünnan, Siberia, Amur, Japan, China, Europe, W. African Islands.* II p. 185.
1498. **N. sundænsis** C. Müller. *Java.* II p. 185.
1499. **N. tjibodensis** Fleischer. *Java.* II p. 185.
1500. **N. crispa** (Lin.) Hedwig. *Caucasus, Alps, Madeira, Canary Isl.* II p. 186.
1501.*‡ **N. himalayana** Mitten. Sikkim, Ceylon. II p. 186.
1502.† **N. birmensis** Hampe. Burma. II p. 186.
1503.* **N. longeexserta** Hampe. Sikkim, Bhotan. II p. 186.
1504.*† **N. crenulata** Harvey. N. W. Himalaya, Kumaon, Nepal, Khasia. II p. 186.
1505.‡ **N. Goughiana** Mitten. Nilgiris. II p. 186.
1506.* **N. complanata** (Lin.) Hübener. N. W. India. *Persia, Caucasus, Europe, N. Afr., N. Am.* II p. 186.
1507. **N. Besseriana Juratzka.** *Persia, Caucasus, Europe.* II p. 186,
1508.‡ **N. Andrei.** Theriot et Varde. S. India.

Genus : **NECKERIOPSIS.**

1509.†‡ **N. crinata** (Griffith) Fleischer. Abor, Assam, Ceylon, *Tonkin, Philippines, China.* II p. 187.

1510.*† **N. fimbriata** (Harvey) Fleischer. *Nepal, Sikkim, Khasia.* II p. 187.

1511.‡ **N. Parishiana** (Mitten) Fleischer. Burma. II p. 187.

1512.† **N. acutata** (Mitten) Fleischer. Sikkim, Abor, Khasia. II p. 187.

1513.‡ **N. andamana** (C. Müller) Fleischer. W. Ghats, Kanara, Andamans, Singapur. II p. 187.

1514. **N. nigrescens** Brotherus. *Siam.* II p. 187.

1515.‡ **N. penicillata** (Herzog) Brotherus. Malacca. II p. 187.

1516. **N. gracilenta** (Bryol. jav.) Fleischer. *Indian Archipelago, Samoa, Admiralty Isl.* II p. 187.

1517. **N. obtusata** (Montagne) Brotherus. *Cochin China.* II p. 187.

1518. **N. pilosa** Fleischer. *Sumatra.* II p. 187.

1519. **N. bornensis** Fleischer. *Borneo.* II p. 187.

1520.*‡ **N. exserta** (Hooker) Brotherus. N. W. Himalaya, *Nepal, Sikkim,* S. India, *Malacca.* II p. 188.

1521. **N. Moutieri** (Brotherus et Paris) Fleischer. *Tonkin.* II p. 188.

1522.‡ **N. Lepineana** (Montagne, Fleischer). Ceylon, *Indian Archipelago, Pacific Isl., C. Afr., Madagascar, Comoroes.* II p. 188.

1522*a*. **N. nitidula** (Mitten) Fleischer. *Tonkin, Formosa, Philippines, Japan, China.* II p. 188.

Genus : **HIMANTOCLADIUM.**

1523. **H. Plumula** (Nees) Fleischer. *Sumatra, Java, Borneo, Philippines, New Caledonia, New Guinea.* II p. 190.

1524.‡ **H. Arbuscula** (Hampe) Fleischer. Penang. II p. 190.

1525.‡ **H. flaccidum** (C. Müller) Fleischer. Ceylon, *Java.* II p. 190.

1526.‡ **H. rugulosum** (Mitten) Fleischer. S. India, Ceylon. II p. 190.

1527.† **H. urocladum** (Mitten) Fleischer. Burma. II p. 190.

1528. **H. cyclophyllum** (C. Müller) Fleischer. *Java, Sumbawa, Ceram, Celebes, Borneo, Philippines.* II p. 190.

1529. **H. loriforme** (Bryol. jav.) Fleischer. *Java, Borneo, Celebes, Ceram, New Guinea, Japan, Philippines, New Hebrides, Fiji, Samoa.* II p. 190.

Genus : **HOMALIODENDRON.**

1530.*†‡ **H. exiguum** (Bryol. jav.) Fleischer. Garhwal, Abor Assam, S. India, Ceylon, Malacca, *Sumatra, Java, Philippines, Tonkin, New Guinea, Australia, Tahiti, Isle de France, Bourbon.* II p. 192.

1531. **H. Fleischeri** Dixon. *Borneo.* II p. 192.

1532.‡ **H. spathulifolium** (C. Müller) Fleischer. India, *Philippines.* II p. 192.

1533.*† **H. microdendron=H. glossophyllum** (Montagne) Fleischer. N. W. Himalaya, Sikkim, Bhotan, Khasia, Burma, *Yünnan, Formosa, Borneo.* II p. 192.

1534. **H. elegantulum** Thériot. *Annam.* II p. 192.

1535.‡ **H. Sakontala** Lorentz. India. II p. 192.

1536.‡ **H. intermedium** Herzog. Malacca. II p. 192.

1537.*‡ **H. Montagneanum** (C. Müller) Fleischer. Sikkim, Nilgiris, *Yünnam, Setchwan.* II p. 192.

1538.*† **H. Hookerianum** Mitten. Sikkim, Assam, Khasia, *Bali.* (Possibly indentical with H. Montagneanum. II p. 192.

1539.* **H. Strachcyanum** (Mitten) Fleischer. Kumaon. II p. 192.

1540.* **H. Paguei** (Renauld et Cardot) Brotherus. Sikkim. II p. 192.

1541.† **H. rectifolium** (Mitten) Fleischer. Khasia. II p. 192.

1542. **H. crassinervum** Thériot. *Annam.* II p. 192.

1543.† **H. dentatum** (Griffith) Fleischer. Assam. II p. 192.

1544.* **H. pinnatelloides** Herzog. Malacca. II p. 192.

1545.†‡ **H. flabellatum** (Dickson) Fleischer. Abor, Nilgiris, Ceylon, Malacca, *Indian Archipelago, Philippines, Japan, New Caledonia, New Guinea, Austr.* II p. 192.

1546. **H. Beccarianum** (Hampe) Brotherus. *Borneo.* II p. 192.

1547.*‡ **H. scalpellifolium** (Mitten) Fleischer. Sikkim, Ceylon, *Sumatra, New Guinea, Formosa, Tonkin, Japan, Philippines, New Caledonia.* II p. 192.

1548.*‡ **H. ligulifolium** (Mitten) Fleischer. Sikkim, Ceylon, *Sumatra, Japan.* II p. 192.

1549. **H. squarrosulum,** Fleischer. Sumatra, Java. II p. 192.

1550. **H. javanicum** (C. Müller) Fleischer. Ceylon, Java, Borneo. II p. 192.

Genus: **HOMALIOPSIS.**

1551.‡ **H. Targioniana** Gough. S. India, *Yünnan, Japan.* II. p. 193.

Genus: **HOMALIA.**

1552. **H. pusilla** Bryol. jav. *Ceram.* II p. 193.

1553. **H. trichamanoides** (Schreber) Bryol. eur. *Caucasus, Siberia, China, Japan, Europe.* II p. 193.

1554.* **H. obtusata** (Mitten) Jæger. N. W. Himalaya, Tibet. II p. 193.

1555. **H. arcuata** Bryol. jav. *Sumatra, Halmahera.* II p. 193.

1556. **H. pygmæa** (Renauld et Cardot) Brotherus. S. India.

Genus : **HANDELIOBRYUM.**

1557.‡ **H. himalayanum** Brotherus. Sikkim. II p. 194.
1558. **H. setchwanicum** Brotherus. Setchwan. II p. 194.

Genus : **PINNATELLA.**

1559.‡ **P. anacamptolepis** (C. Müller) Brotherus. Ceylon, *Sumatra, Java.* II p. 195.
1560.‡ **P. microptera** (C. Müller) Fleischer. Singapur, *Borneo, Philippines.* II p. 195.
1561.‡ **P. submucronata** Brotherus. Ceylon. II p. 195.
1562. **P. mucranata** (Bryol. jav.) Fleischer. *Tonkin, Sumatra, Java, Borneo, Ceram, Celebes, New Guinea, Samoa.* II p. 195.
1563.*† **P. ambigua** (Bryol. jav.) Fleischer. Bhotan, Burma, *Sumatra, Java, Philippines.* II p. 195.
1564. **P. Kühliana** (Bryol. jav.) Fleischer. *Sumatra, Java, Celebes, Ceram, New Guinea.* II p. 195.
1565. P. **laosiana** Brotherus et Paris. Laos. II p. 195.
1566. **P. ligulifera** (Lacoste) Fleischer. *Sumatra, Moluccas.* II p. 196.
1567. **P. Makinoi** Brotherus. *Yünnan, Formosa, Japan.* II p. 196.
1568.‡ **P. lingulata** Dixon. Malacca. II p. 196.
1569. **P. intralimbata** Fleischer. *Java, Queensland, Annam.* II p. 196.
1570.* **P. Kurzana** (Hampe) Fleischer. Sikkim, Bhotan. II p. 196.
1571.*†‡ **P. alopecuroides** (Hooker) Fleischer. Nepal, Sikkim, Bhotan, Burma, S. India, Ceylon, *Sumbawa, Tonkin.* II p. 196.
1572.‡ **P. calcuttensis** (C. Müller) Fleischer. Bengal, W. Ghats, Kanara. II p. 196.
1573.‡ **P. limbata** Dixon. Kanara. II p. 196.
1573*a*.‡ **P. Forcauana** Thériot et Varde. S. India.

Genus : **POROTRICHUM.**

1574.* **P. fruticosum** Mitten. Sikkim. II p. 198.

Genus : **POROTHAMNIUM.**

1575.‡ **P. ceylonense**, Fleischer. Ceylon. II p. 200.

Genus : **THAMNIUM.**

1576.* **Th. ellipticum** (Bryol. jav.) Kindberg. *Sumatra, Java, Borneo, Philippines, New Mecklenburg.* II p. 200.
1577.‡ **Th. alopecurum** (Lin.) Bryol. eur. S. India, *Persia, Caucasus, Japan. Europe, N. Afr.* II p. 201.
1578. **Th. scoposiforme** Kindberg. *Caucasus.* II p. 201.
1579. **Th. caucasicum** Kindberg. *Caucasus.* II p. 201.

1580. **Th. latifolium** (Bryol. jav.) Paris. *Sumatra, Java, New Zealand.* II p. 201.
1581.*‡ **Th. subserratum** (Hooker) Dozy et Molkenboer. Simla, Garhwal, Sikkim, Ceylon, *Philippines.* II p. 201.
1582.‡ **Th. Schmidii** (C. Müller) Jæger. Nilgiris. II p. 201.
1583.*‡ **Th. arcuans** Mitten, Jæger. Sikkim, Nilgiris. II p. 202.
1584. **Th. plicatulum** Lacoste. *Formosa, Japan, Korea.* II p. 202.

Family : **LEMBOPHYLLACEÆ.**

Genus : **CAMPTOCHÆTE.**

1585‡ **C.** (?) **thamnioides** Brotherus et Dixon. Ceylon. II p. 204.

Genus : **DOLICHOMITRA.**

1586. **D. cymbifolia** (Lindberg) Brotherus. *Formosa, Japan.* II p. 209.

Genus : **ISOTHECIUM.**

1587. **I. viviparum** (Necker) Lindberg. *Caucasus, Europe, N. Afr.*
1588. **I. trichocladon** (Bryol. jav.) Fleischer. *Java, Celebes, Ceram.* II p. 210.
1589.‡ **I. rigidissimum** (C. Müller) Fleischer. Ceylon. II p. 210.
1590.‡ **I. ceylonense** Fleischer. Ceylon. II p. 210.
1591. **I. subdiversiforme** Brotherus. *Formosa,* Japan. II p. 211.

Series : HOOKERIALES.

Subseries : NEMATACINEÆ.

Family : **NEMATACEÆ.**

Genus : **EPHEMEROPSIS.**

1592.‡ **E. tjibotensis** Goebel. Malacca, *Sumatra, Java, New Guinea.* II p. 216.

Subseries : HOOKERIINEÆ.

Family : **HOOKERIACEÆ.**

Genus : **DALTONIA.**

1593.† **D. marginata** Mitten. Khasia. II p. 223.
1594.‡ **D. contorta** C. Müller. Ceylon, *Java, Luzon.* II p. 223.
1595.** **D. flexifolia** Mitten. Nepal, Ceylon. II p. 223.
1596.* **D. semitorta** Mitten. Sikkim. II p. 224.
1597.‡ **D. brevipedunculata** Mitten. Bombay. II p. 224.

1598.‡ **D. reticulata** C. Müller. Ceylon. II p. 224.
1599. **D. mucronata** Bryol. jav. *Java*. II p. 224.
1600. **D. aristifolia** Renauld et Cardot. *Java*. II p. 224.
1601.* **D. apiculata** Mitten. Nepal. II p. 224.

Genus : **DISTICHOPHYLLIDIUM.**

1602. **D. rhizophorum** Fleischer. *Java*. II p. 226.
1603. **D. Nymanianum** Fleischer. *Java*. II p. 226.

Genus : **LESKEODON.**

1604. **L. acuminatus** (Bryol. jav.) Fleischer. II p. 226.

Genus : **DISTICHOPHYLLUM.**

1605. **D. brevicuspis** Fleischer. *Java*. II p. 229.
1606. **D. jungermannioides** (C. Müller) Bryol. jav. *Java, Sumbawa*. II p. 229.
1607. **D. gracilicaule** Fleischer. *Java*. II p. 229.
1608. **D. nigricaule** Fleischer. *Java, Philippines*. II p. 229.
1609.*† **D. Griffithii** (Mitten) Paris. Nepal, Abor, Khasia. II p. 229.
1610.‡ **D. Montagneanum** (C. Müller) Bryol. jav. Nilgiris, Ceylon, *Java*. II p. 229.
1611.‡ **D. ceylanicum** (Mitten) Paris. Ceylon. II p. 229.
1612.‡ **D. cuspidatum** Dozy et Molkenboer. Ceylon, *Sumatra, Java, New Guinea, Philippines, New Caledonia, Society Isls*. II p. 229.
1613. **D. Schmidtii**. Brotherus. *Siam*. II p. 229.
1614. **D. Osterwaldii** Fleischer. *Java, Philippines*. II p. 230.
1615. **D. tortile** Bryol. jav. *Java, Banca, Philippines*. II p. 230.
1616.‡ **D. limpidum** Thwaites et Mitten. Ceylon. II p. 230.
1617.‡ **D. succulentum** (Mitten) Brotherus. Nilgiris, Palnis. II p. 230.
1618.‡ **D. undulatum** Dozy et Molkenboer. Malacca. II p. 230.
1619.* **D. heterophyllum** (Wilson) Paris. Sikkim. II p. 230.
1620.† **D. obovatum** (Griffith) Paris. Khasia. II p. 230.
1621.‡ **D. Mittenii** Bryol. jav. Ceylon, Malacca, *Java, Formosa, Philippines, New Caledonia*. II p. 230.
1622.* **D. humifusum** (Wilson) Paris. Himalaya. II p. 230.
1623.‡ **D. spathulatum** Dozy et Molkenboer. Malacca, *Sumatra, Java, Sumbawa*. I p. 230.
1623*a*. **D. madurense** Thériot et Varde. S. India.

Genus : **ERIOPUS.**

1624. **E. remotifolius** C. Müller. *Sumatra, Java, Borneo, New Guinea.* II p. 233.
1625. **E. ramosus** Fleischer. *Java.* II p. 233.
1626. **E. parvirctis** Fleischer. *Java.* II p. 233.
1627. **E. limbatulus** (Renauld et Cardot) Fleischer. *Java.* II p. 233.
1628.‡ **E. lucidus** Thwaitès et Mitten. Ceylon. II p. 233.

Genus : **HOOKERIA.**

1629.*‡ **H. acutifolia** Hooker. Nepal, Sikkim, S. India, Ceylon, *Java, S. Am., Guadeloupe.* II p. 236.

Genus : **CYCLODICTYON.**

1630.‡ **C. Blumeanum** (C. Müller) Brotherus. Ceylon, *Sumatra, Java, New Guinea, Philippines, Formosa, Tahiti.* II p. 236.

Genus : **CALLICOSTELLA.**

1631. **C. armata** Herzog. *Ceram.* II p. 239.
1632.‡ **C. papillata** (Montagne) Jæger. Bengal, S. India, *Sumatra, Java, Borneo, Formosa, Pacific Islands.* II p. 239.
1633. **C. Eberhardtiana** Brotherus et Paris. *Tonkin.* II p. 240.
1634. **C. prabaktiana** (C. Müller) Jæger. *Annam, Borneo.* II p. 240.
1635. **C. Beccariana** (Hampe) Jæger. *Borneo.* II p. 240.

Genus : **HOOKERIOPSIS.**

1636.*‡ **H. purpurata** (Mitten) Brotherus. Sikkim, Ceylon. II p. 243.
1637.†‡ **H. secunda** (Griffith) Brotherus. Khasia, Ceylon. II p. 243.
1638.‡ **H. Thwaitesiana** (Mitten) Brotherus. Ceylon, *Sumatra.* II p. 243.
1639. **H. macropus** (Bryol. jav.) Brotherus. *Java,* II p. 243.
1640.‡ **H. utacamundiana** (Montagne) Brotherus. Nilgiris, Palnis, Ceylon, *Sumatra.* II p. 243.
1641. **H. Wichuræ** (Brotherus) Fleischer. *Java.* II p. 243.

Genus : **LEPIDOPILIDIUM.**

1642.* **L. furcatum** (Thwaites et Mitten) Brotherus. S. India, Ceylon. II p. 244.

Genus : **Actinodontium.**

1643.‡ **A. adscendens** Schwaegrichen. Ceylon, *Java, Philippines.* II p. 245.

1644.‡ **A. rhaphidiostegum** (C. Müller) Bryol. jav. Kanara, *Java, Celebes.* II p. 245.

Genus : **PSEUDOHYPNELLA.**

1645.* **Ps. verrucosa** (Dozy et Molkenboer) Fleischer. Ceylon, *Java, Banca.* II p. 256.

Genus : **CHAETOMITRIUM.**

1646.* **Ch. volutum** Mitten. Ceylon. II p. 259.

1647.* **Ch. papillifolium** Bryol. jav. Ceylon, Andamans, *Java, Borneo, Philippines, Cochin China.* II p. 259.

1648. **Ch. lancifolium** Mitten. *Moluccas.* II p. 259.

1649. **Ch. fimbriatum** (C. Müller) Bryol. jav. *Moluccas, New Guinea.* II p. 259.

1650. **Ch. philippense** (Montagne) Bryol. jav. *Java, Ceram, Philippines.* II p. 259.

1651. **Ch. elongatum** Dozy et Molkenboer. *Java, Borneo, Moluccas.* II p. 259.

1652. **Ch. pseudoelongatum** Brotherus. *Indian Archipelago.* II p. 259.

1653.‡ **Ch. confertum** Thwaites et Mitten. Ceylon. II p. 259.

1654.‡ **Ch. perakense** Brotherus. Malacca. II p. 534.

1655. **Ch. muricatum** Bryol. jav. *Java.* II p. 260.

1656.* **Ch. leptopoma** (Schwaegrichen) Bryol. jav. Malacca, *Java.* II p. 260.

1657. **Ch. orthorrhynchum** (Dozy et Molkenboer) Bryol. jav. *Sumatra, Java, Borneo, Celebes, Philippines,* II p. 260.

1658.‡ **Ch. borneense** Mitten. Malacca, *Borneo, Philippines.* II p. 260.

1659. **Ch. horridulum** Bryol. jav. *Java.* II p. 260.

1660. **Ch. lanceolatum** Bryol. jav. *Java, Philippines.* II p. 260.

1661. **Ch. torquescens** Bryol. jav. *Java, Amboina, Ceram, New Guinea.* II p. 260.

1662. **Ch. Vrieseanum** Bryol. jav. *Ceram.* II p. 260.

1663. **Ch. acanthocarpum** Bryol. jav. *Ceram, New Guinea.* II p. 260.

1664.‡ **Ch. setosum** Brotherus. Malacca. II p. 534.

Genus : **CHAETOMITRIOPSIS.**

1665.* **Ch. glaucocarpa** (Reinwardt) Fleischer. Sikkim, *Java, Philippines, Formosa.* II p. 260.

Genus : **ORONTOBRYUM.**

1666.* **O. Hookeri** (Mitten) Fleischer. Sikkim. II p. 261.
1667.* **O. recurvulum** Mitten. Sikkim. II p. 261.

Genus : **DIMORPHOCLADON.**

1668. **D. bornense** Dixon. *Borneo, New Guinea.* II p. 261.

Family : **SYMPHYODONTACEAE.**

Genus : **SYMPHYODON.**

1669.‡ **S. angustus** (C. Müller) Jaeger. Bombay, S. India. II p. 267.
1670.*† **S. crinaceus** (Mitten) Jaeger. Sikkim, Khasia. II p. 267.
1671.* **S. oblongifolius** (Renauld et Cardot) Brotherus. Sikkim. II p. 267.
1672.‡ **S. Perrottetii** Montagne. Kanara, Nilgiris, Ceylon, *Java, Ceram, Halmahera.* II p. 267.
1673.*† **S. asper** (Mitten) Jaeger. Bhotan, Khasia. II p. 267.
1674.* **S. echinatus** (Mitten) Jaeger. Sikkim. II p. 267.
1675.† **S. scabrisetus** Dixon. Abor. II p. 267.
1676.† **S. complanatus** Dixon. Abor. II p. 267.
1677.† **S. pennatulus** (Mitten) Dixon. Burma. II p. 267.
1678.*‡ **S. erraticus** (Mitten) Jaeger. Nepal, Sikkim, Bhotan, Ceylon. II p. 267.
1679.† **S.** (?) **orientalis** (Mitten). Assam. II p. 267.

Family : **LEUCOMIACEAE.**

Genus : **LEUCOMIUM.**

1680.‡ **L. aneurodictyum** (C. Müller) Jaeger. Kanara, Ceylon, Malacca, *Sumatra, Java, Amboina, Borneo, Pacific and E. Afr. Islands, C. Afr.* II p. 269.

Family : **HYPOPTERYGIACEAE.**

Genus : **LEPIDIUM.**

1681. **L. trichocladon** (Bryol. jav.) Fleischer. *Java, Moluccas, Halmahera.* II p. 271.
1682.* **L. javanicum** Hampe. S. India, Ceylon, Malacca, *Sumatra, Java, Lombok, New Guinea, Philippines.* II p. 271.
1683.* **L. limbatulum** (C. Müller) Brotherus. Ceylon. II p. 271.

Genus : **HYPOPTERYGIUM.**

1684. **H. Vriesei** Bryol. jav. *Sumatra, Java, Amboina, Ceram, New Guinea, Philippines.* II p. 274.
1685. **H. Chamaedrys** Bryol. jav. *Java.* II p. 274.
1686.* **H. Decolyi** Brotherus. Sikkim. II p. 274.
1687.* **H. aristatum** Bryol. jav. Himalaya (?) *Java.* II p. 275.
1688.‡ **H. apiculatum** Mitten. Ceylon. II p. 275.
1689.* **H. tibetanum** Mitten. Tibet. II p. 275.
1690.*† **H. flavolimbatum** C. Müller. N. W. Himalaya, Nepal, Khasia. II p. 275.
1691.‡ **H. ceylanicum** Mitten. Ceylon, *Sumatra, Java, New Guinea, Philippines.* II p. 275.
1692. **H. humile** Mitten. *Java.* II p. 275.
1693. **H. tenellum** Mitten. S. India. II p. 275.

Genus : **CYATHOPHORELLA.**

1694.* **C. intermedia** (Mitten) Brotherus. N. W. Himalaya, Kumaon. II p. 277.
1695. **C. tenera** (Bryol. jav.) Fleischer. *Sumatra, Sumbawa.* II p. 278.
1696. **C. parvifolia** (Bryol. jav.) Fleischer. *Java.* II p. 278.
1697.† **C. Burkillii** (Dixon) Brotherus. Abor. II p. 278.
1698.*† **C. Hookériana** (Griffith) Fleischer. Sikkim, Khasia, *Philippines.* II p. 278.
1699.*† **C. Adiantum** (Griffith) Fleischer. N. W. Himalaya, Sikkim, Bhotan, Khasia, *Philippines.* II p. 278.
1700.‡ **C. sublimbata** (Thwaites et Mitten) Fleischer. Ceylon. II p. 278.
1701. **C. spinosa** (C. Müller) Fleischer. *Moluccas, New Guinea, New Hebrides.* II p. 278.
1702. **C. japonica** Brotherus. *Tonkin, Japan.* II p. 278.

Series : HYPNOBRYALES.

Subseries : LESKEINEAE.

Family : **THELIACEAE.**

Genus : **MYURELLA.**

1703.* **M. julacea** (Villars) Bryol. jav. Kashmir, *C. Asia, Siberia, China, Caucasus, Europe.* II p. 280.

Family: **FABRONIACEAE.**

Genus: **FABRONIA.**

1704.‡ **F. Nietneri** C. Müller. Ceylon, Java. II p. 283.
1705.‡ **F. patentissima** C. Müller. Ceylon. II p. 283.
1706.‡ **F. Beccarii** Hampe. Ceylon. II p. 283.
1707. **F. curvirostris** Dozy et Molkenboer. *Java, Philippines.* II p. 284.
1708. **F. octoblepharis** (Schleicher) Schwaegrichen. *Kurdistan, Caucasus, Transbaicalia, Europe, N. Am.* II p. 284.
1709.‡ **F. secunda** Montagne. S. India, Ceylon. II p. 284.
1710. **F. Zollingeri** C. Müller. *Java.* II p. 284.
1711.* **F. minuta** Mitten. Kumaon. II p. 284.
1712.‡ **F. Goughii** Mitten. S. India, Ceylon. II p. 284.
1713. **F. Schmidii** C. Müller. Nilgiris. II p. 285.
1714.‡ **F. madurensis** Dixon et Varde. Palni Hills, Sirumàlai.

Genus: **ANACAMPTODON.**

1715. **A. splachnoides** (Froelich) Bridel. *Caucasus, Europe, N. Am.* II p. 287.
1716.‡ **A. validinervis** Dixon et Varde. Palni Hills, Sirumalai.

Genus: **JURATZKAEA.**

1716*a*.‡ **J. indica** Brotherus et Varde. Palnis.

Genus: **SCHWETSCHKEA.**

1717. **S. formosica** Cardot. *Formosa.* II p. 293.
1718. **S. pygmaea** (Dozy et Molkenboer) C. Müller. *Java, Borneo.* II p. 293.
1719. **S. javensis** Fleischer. *Java.* II p. 293.
1720. **S. gracillima** Fleischer. *Sumatra.* II p. 293.
1721.‡ **S. indica** Brotherus. W. Ghats, Palnis. II p. 293.
1722.‡ **S. applanata** (Thwaites et Mitten) Brotherus. S. India, Ceylon. II p. 293.
1723. **S. laxa** (Wilson) Jaeger. *Formosa, E. China.* II p. 293.

Genus: **SCHWETSCHKEOPSIS.**

1724.* **S. Fabronia** (Hooker) Brotherus. Nepal. II p. 299.

Family : **LESKEACEAE.**

Genus : **RHEGMATODON.**

1725.†‡ **Rh. orthostegius** Montagne. Assam, Nilgiris, Palnis, Ceylon. II p. 299.

1726.*†‡ **Rh. polycarpus** (Griffith) Mitten. N. W. Himalaya, Sikkim, Assam, Khasia, Madura. II p. 299.

1727.*† **Rh. declinatus** (Hooker) Bridel. Nepal, Khasia. II p. 299.

1728.‡ **Rh. serrulatus** (Dozy et Molkenboer) Bryol. jav. Ceylon, *Java.* II p. 299.

Genus : **LINDBERGIA.**

1729. **L. Austini** (Sullivant) Brotherus. *Caucasus, N. Am.* II p. 300.

1730.‡ **L. longinervis** Cardot et Dixon. India. II p. 300.

1731.* **L. Duthiei** Brotherus. Himalaya : Garhwal. II p. 300.

1732.* **L. pachytheca** Dixon. Garhwal.

Genus : **LESKEA.**

1733. **L. perstricta** Dixon. Abor. II p. 302.

1734. **L. polycarpa** Ehrhardt. *Caucasus, Siberia, Amur, Europe, N. Am.* II p. 302.

1735.‡ **L. consanguinea** (Montagne) Mitten. Nilgiris, *Yünnan.* II p. 302.

Genus : **LESKEELLA.**

1736.* **L. nervosa** (Schwaegrichen) Loeske. Kashmir, Panjab, *Atlai, Siberia, Amur, N. Am.* II p. 303.

1737. **L. incrassata** (Lindberg) Brotherus. *Caucasus.* II p. 303.

Genus : **PSEUDOLESKEELLA.**

1738. **Ps. catenulata** (Bridel) Kindberg. *Caucasus, C. Asia, Siberia, W. Asia, Europe.* II p. 304.

1739. **Ps. laxiramea** (Schiffner) Brotherus. *Persia.* II p. 304.

1740. **Ps. tectorum** (A. Braun) Kindberg. *Altai, Siberia, Europe, N. Am.* II p. 304.

Genus : **LESCURAEA.**

1741.* **L. striata** (Schwaegrichen) Bryol. eur. Kashmir, *Caucasus, Europe.* II p. 305.

1742.* **L. saxicola** (Bryol. eur.) Molendo. N. W. Frontier Prov., *Caucasus, Siberia, N. Europe.* II p. 306.

Genus : **PSEUDOLESKEA.**

1743.* **Ps. atrovirens** (Dickson) Bryol. eur. N. W. Himalaya, Kashmir, *Caucasus, Altai, Europe.* II p. 306.
1744. **Ps. laevifolia** (Mitten) eger. Kashmir, N. W. Himalaya. II p. 306.
1745. **Ps. secunda** (Arfnell) Brotherus. *Altai, Siberia.* II p. 307.

Genus : **PSEUDOLESKEOPSIS.**

1746. **Ps. annamensis** Brotherus et Paris. *Annam.* II p. 308.
1747. **Ps. Zippelii** (Dozy et Molkenboer) Brotherus. *Java, Amboina.* II p. 308.
1748. **Ps. Osterwaldii** Fleischer. *Java.* II p. 309.
1749.† **Ps. orbiculata** (Mitten) Brotherus. Khasia. II p. 309.
1750.‡ **perfalcata** Dixon et Varde. Palni Hills.

Family : **THUIDIACEAE.**

Genus : **LEPTOPTERYGYNANDRUM.**

1751.* **L. subintegrum** (Mitten) Brotherus. N. W. Himalaya. II p. 309.

Genus : **HETEROCLADIUM.**

1752. **H. squarrosum** (Voit) Lindberg. *Caucasus, Europe, N. Am.* II p. 311.

Genus : **HAPLOHYMENIUM.**

1753.* **H. triste** (Cesati) Kindberg. Nepal, Kumaon, Tibet, *Usuri, China, Japan, Europe, N. Am.* II p. 313.
1754. **H. Mithouardi** (Brotherus et Paris) Brotherus. *Tonkin.* II p. 313.
1755. **H. submicrophyllum** (Cardot) Brotherus. *Tonkin.* II p. 313.
1756.‡ **H. filiforme** (Thwaites et Mitten) Brotherus. Ceylon. II p. 313.

Genus : **ANOMODON**

1757.* **A. apiculatus** Bryol. eur. Himalaya, *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 314.
1758.* **A. planatus** Mitten. Simla, Sikkim, *Japan.* II p. 314.
1759. **A. tonkinensis** Bescherelle. *Tonkin.* II p. 315.
1760. **A. subintegerrimus** Brotherus et Paris. *Tonkin.* II p. 315.
1761.* **A. integerrimus** Mitten. Simla, Garhwal, Nepal, Burma. II p. 315.

1762.* **A. viticulosus** (Lin.) Hooker et Taylor. Simla, Nepal, *Caucasus, Siberia, China, Europe, N. Africa, N. Am.* II p. 315.

1763.* **A. attenuatus** (Schreber) Hübener. Himalaya, *Caucasus, Japan, Europe, N. Am.* II p. 315.

1764.* **A. acutifolius** Mitten. Kumaon. II p. 315.

1765.* **A. rostratus** (Hedwig) Schimper. N. W. Himalaya, *Caucasus, Europe, N. Am.* II p. 315.

1766. **A. longifolius** (Schleicher) Bruch. *Caucasus, Ussuri, Europe.* II p. 315.

Genus: **HERPETINEURON.**

1767.*†‡ **H. Toccoae** (Sullivant et Lesquereux) Cardot. Himalaya: Garhwal, Khasia, S. India, Ceylon, *Sumatra, Java, Celebes, Tonkin, Formosa, Manchuria, Japan, New Caledonia, Aneityum, N. and S. Am.* II p. 315.

Genus: **CLAOPODIUM.**

1768.* **C. pellucinerve** (Mitten) Best. Simla, *Yukon.* II p. 318.

1769.‡ **C. semitortulum** (C. Müller) Brotherus. Ceylon. II p. 318.

1770.*†‡ **C. prionophyllum** C. Müller. Nepal, Sikkim, Khasia, S. India, Ceylon, *Java, Celebes, Japan, Korea. China.* II p. 318.

1771.† **C. assurgens** (Sullivant et Lesquereux) Cardot. Abor. *Java, Formosa, Japan, Korea, China.* II p. 318.

1772. **C. aculeatum** Brotherus et Paris. *Laos.* II p. 318.

1773. **C. fulvellum** Herzog. *Yünnan.* II p. 318.

1774.* **C. strepsiphyllum** Dixon. Garhwal.

Genus: **HAPLOCLADIUM.**

1775. **H. microphyllum** (Swartz) Brotherus. *Formosa, Korea, Japan, China, Siberia, Sweden, America.* II p. 320.

1776.* **H. tibetanum** (Salmon) Brotherus. Tibet. II p. 320.

1777.‡ **H. Jaquemontii** (Bruch et Schimper) Brotherus. India. II p. 320.

1778.† **H. obscuriusculum** Brotherus. Upper Assam. II p. 320.

1779. **H. filirameum** (Brotherus et Paris) Fleischer *Tonkin.* II p. 320.

1780. **H. ringens** Brotherus et Paris. *Tonkin.* II p. 320.

1781.* **H. scopulum** (Mitten) Brotherus. Himalaya: Garhwal. II p. 320.

1782.* **H. subcapillatum** (Renauld et Cardot) Brotherus. Himalaya. II p. 320.

1783.*† **H. subulaceum** (Mitten) Brotherus. N. W. Himalaya, Sikkim, Khasia. II p. 320.

1784. **H. capillatum** (Mitten) Brotherus. Sikkim, *Yünnan, China, Formosa, Japan.* II p. 320.
1785. **H. Eberhardtii** Brotherus et Paris. *Annam.* II p. 320.
1786. **H. latifolium** (Lacoste) Brotherus. *Formosa, Japan.* II p. 320.
1787. **H. cryptocoleum** (Bescherella) Brotherus. *Tonkin.* II p. 320.
1788. **H. Larminati** (Brotherus et Paris) Brotherus, *Tonkin.* II p. 320.
1789.‡ **H. vestitum** Dixon et Varde. S. India.

Genus : **PELEKIUM.**

1790. **P. calcicola** Fleischer. *Java.* II p. 322.
1791.‡ **P. velatum** Mitten. Malacca, *Siam, Sumatra, Java, Borneo, Celebes, Amboina, New Guinea, Philippines, Pacific Islands.* II p. 322.
1792. **P. bifarium** (Bryol. jav.) Fleischer. *Sumatra, Java, Amboina.* II p. 322.
1793. **P. tenue** Fleischer. *Celebes.* II p. 322.

Genus : **THUIDIOPSIS.**

1794. **Th. crispatula** (Cardot) Fleischer. *Celebes.* II p. 322.

Genus : **THUIDIUM.**

1795. **Th. vestitissimum** Bescherelle. *Yünnan.* II p. 324.
1796.‡ **Th. tamariscellum** (C. Müller) Bryol. jav. Nilgiris Palnis, *Sumatra, Java, Philippines, Tonkin.* II p. 324.
1797.‡ **Th. Brotheri** Salmon. Chanda, S. India. II p. 324.
1798.* **Th. contortulum** (Wilson) Jaeger. Sikkim. II p. 324.
1799.* **Th. sparsifolium** (Mitten) Jaeger. N. W. Himalaya, Nepal, Bhotan. II p. 324.
1800.* **Th. Stevensii** Renauld et Cardot. Himalaya. II p. 324.
1801.† **Th. minusculum** (Wilson) Jaeger. Khasia. II p. 324.
1802.*† **Th. remotifolium** (Hooker) Brotherus. Nepal, Assam. II p. 324.
1803.† **Th. investe** (Mitten) Jaeger. Burma. II p. 324.
1804. **Th. rubiginosum** Bescherelle. *Yunnan.* II p. 324.
1805.*†‡**Th. Meyenianum** (Hampe) Bryol. jav. Nepal, Sikkim, Assam, S. India, Ceylon, Annam, *Saigon, Sumatra, Java, Banda, Banca, New Guinea, Philippines, Solomon Isles.* II p. 325.
1806. **Th. Boulanum** Bescherelle. *Tonkin.* II. p. 325.
1807. **Th. fuscatum** Bescherelle. *Yünnan.* II p. 325.
1808. **Th. talongense** Bescherelle. *Yünnan.* II p. 326.
1809.* **Th. squarrosulum** Renauld et Cardot. Garhwal, Sikkim. II p. 325.

1810.* **Th. asperulisetum** Renauld et Cardot. Garhwal, Sikkim. II p. 325.

1811.* **Th. Haplohymenium** (Harvey) Jaeger. Garhwal, Kumaon, Sikkim. II p. 325.

1812.‡ **Th. plumulosum** (Dozey et Molkenboer) Bryol. jav. Ceylon, *Indian Archipelago, New Guinea, Philippines, Pacific Islands.* II p. 325.

1813.*†‡**Th. glaucinum** Mitten. N. W. Himalaya, Sikkim, Assam, S. India, Ceylon, *Tonkin, Japan.* II p. 325.

1814.‡ **Th. glaucinoides** Brotherus. Burma, Kareni, S. India, *Tonkin, Formosa, Indian Archipelago, Liu Kiu, Pacific Islands.* II p. 326.

1815.‡ **Th. orientale** Mitten. Penang. II p. 326.

1816. **Th. batakense** Fleischer. *Sumatra.* II p. 326.

1817. **Th. delicatulum** (Dillenius) Mitten. *Caucasus, Amur, China, Japan, Europe, N. Am.* II p. 326.

1818. **Th. Philiberti** Limpricht. *Altai, Siberia, Amur, Europe, N. Am.* II p. 326.

1819.* **Th. assimile** (Mitten) Jaeger. Himalaya: Garhwal, Kumaon, *Yunnan.* II p. 326.

1820. **Th. recognitum** (Lin.) Lindberg. *Persia, Caucasus, Siberia, Japan, Europe, N. Afr., N. Am.* II p. 326.

1821.*†‡**Th. cymbifolium** (Dozey et Molkenboer) Bryol. jav. Garhwal, Kumaon, Bhotan, Abor, Kashmir, Simla, Nilgiris, Palnis, Khasia, Burma, Ceylon, Nicobars, *Sumatra, Java, Celebes, Amboina, Halmahera, Ceram, Formosa, Annam.* II p. 326.

1822. **Th. casuarinum** (C. Müller) Jaeger. *Tonkin, China, Japan, New Guinea.* II p. 327.

1823. **Th. brachymenium** Herzog. *Yünnan.* II p. 534.

1824.*†‡**Th. trachypodum** (Mitten) Bryol. jav. Sikkim, Abor, Burma, Karwar.

1824*a*.‡ **Th. trachilocarpum** Dixon et Varde. Palnis.

Genus: **ABIETINELLA.**

1825.* **A. abietina** (Dillenius) C. Müller. Gilgit, Kashmir, *C. Asia, Caucasus, Siberia, Amur, Europe, N. America.* II p. 327.

1826.* **A. Brandisii** (C. Müller) Brotherus. N. W. Himalaya. II p. 327.

Genus: **HELODIUM.**

1827. **H. paludosum** (Sullivant) Austin. *Altai, Transbaicalia, Japan, N. Am.* II p. 330.

Genus : **ACTINOTHUIDIUM.**

1828.* *A. Hookeri* (Mitten) Brotherus. Nepal, Sikkim, *Yunnan, China.* II p. 331.

Family : **AMBLYGOSTEGIACEAE.**

Genus : **CRATONEURUM.**

1829. **C. glaucum** (Lamarck) Jensen. *Turkestan, Caucasus, C. Asia, Europe, N. Am.* II p. 334.

Genus : **CAMPYLIUM.**

1830.* **C. hispidulum** (Bridel) Mitten. Kashmir, *Caucasus, Siberia, Amur, China, Japan, Europe.* II p. 335.

1831.‡ **C. lacerulum** (Mitten) Brotherus. India. II p. 335.

1832.* **C. chrysophyllum** (Bridel) Bryhn. W. Himalaya, *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 336.

1833.* **C. helodes** (Spruce) Brotherus. W. Himalaya, *Europe.* II p. 336.

1834. **C. polygamum** (Bryol. eur.) Bryhn. *Siberia, Japan, Europe, N. Am., Patagonia.* II p. 336.

1835.* **C. protenum** (Bridel) Brotherus. W. Himalaya, *Caucasus, Siberia, Europe, N. Am.* II p. 336.

1836. **C. stellatum** (Schreber) Lunge et Jensen. *Thian Shan, Caucasus, Siberia, Europe, N. Am.* II p. 336.

1837.† **C. glaucocarpum** (Reinwardt) Brotherus. Abor.

Genus : **CAMPYLOPHYLLUM.**

1838.* **C. Halleri** (Swartz) Fleischer. W. Himalaya, *Europe, N. Am.* II p. 337.

Genus : **LEPTODICTYUM.**

1839. **L. trichopodium** (Schultz) Warnstorf. *Caucasus, Siberia, Amur, Europe, N. Am.* II p. 337.

1840. **L. kurdicum** (Schiffner) Brotherus. *Kurdistan.* II p. 337.

1841.* **L. riparium** (Lin.) Warnstorf. Tibet, *Siberia, Japan, Formosa, Tonkin, Europe, N. Afr., N. Am.* II p. 337.

Genus : **HYGROAMBLYSTEGIUM.**

1842.* **H. filicinum** (Lin.) Dixon. Gilgit, N. W. Frontier Prov., Chilas, Kashmir, W. Tibet, N. W. Himalaya, *N. and E. Asia, Europe, N. Afr., N. Am.* II p. 334.

1843.* **H. obtusulum** (Mitten) Brotherus. Kumaon. II p. 337.

1844. **H. irriguum** (Wilson) Loeske. *Caucasus, Altai, Europe, N. Afr., N. Am.* II p. 338.

1845.* **H. alare** Dixon. Garhwal.

Genus : **SCIAROMIOPSIS.**

1846. **S. brevifolia** Brotherus. *Setchwan.* II p. 339.

1847. **S. sinensis** Brotherus. *Setchwan.* II p. 339.

Genus : **AMBLYSTEGIUM.**

1848.* **A. serpens** (Lin.) Bryol. eur. W. Tibet, W. Himalaya, *Caucasus, China, Europe, N. Afr., N. and S. Am. New Zealand.* II p. 340.

1849. **A. varium** (Hedwig) Lindberg. *Persia, Caucasus, Siberia, Europe, Madeira, Bermudas, N. Am.* II p. 341.

1850. **A. juratzkanum** Schimper. *Caucasus, Europe, N. Am.* II p. 341.

1851.* **A. compactum** (C. Müller) Austin. Chilas, *Europe, N. Am.* II p. 341.

1852.* **A. rivicola** (Mitten) Jaeger. Tibet. II p. 341.

Genus : **AMBLYSTEGIELLA.**

1853. **A. Sprucei** (Bruch) Loeske. *Caucasus, Siberia, Europe, N. Am.* II p. 342.

1854. **A. confervoides** (Bridel) Loeske. *Caucasus, Europe, N. Am.* II p. 342.

1855.* **A. subtilis** (Hedwig) Loeske. Kashmir, *Caucasus, Europe, N. Am.* II p. 342.

Genus : **DREPANOCLADUS.**

1856.* **D. uncinatus** (Hedwig) Warnstorf, Sikkim, *C. N. and E. Asia, Caucasus, Europe.* II p. 343.

1857. **D. revolvens** (Swartz) Warnstorf. *N. Asia, Europe, N. Am.* II p. 343.

1858.* **D. exannulatus** (Gümbel) Warnstorf. Kashmir, Baltistan, *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 344.

1859. **D. fluitans** (Dillenius) Warnstorf. *N. Asia, Europe, Azores, N. Am., New Zealand, Tasmania, Fuegia.* II p. 344.

1860. **D. aduncus** (Hedwig) Mönkemeyer. *Caucasus, C. and N. Asia, Europe, N. Afr., N. and S. Am., New Zealand.* II p. 344.

Genus : **HYGROHYPNUM.**

1861.* **H. palustre** (Hudson) Loeske. Gilgit, Kashmir, Tibet, *Caucasus, Turkestan, Siberia, Setchwan, Europe, N. Am.* II p. 345.

1862. **H. alpinum** (Schimper) Loeske. *Alps, Norway, Lappland.* II p. 345.

1863.* **H. dilatatum** (Wilson) Loeske. Kashmir, *Turkestan, Caucasus, Siberia, Japan, Europe, N. Am.* II. p. 345.

1864.* **H. micans** (Wilson) Brotherus. Sikkim, *Europe, N. Am.* II p. 346.

1865. **H. ochraceum** (Turner) Loeske. *Caucasus, Siberia, Amur, Japan, Europe, N. Am.* II p. 346.

Genus : **PLATYHYPNIDIUM.**

1866.*‡ **P. rusciforme** (Necker) Fleischer. W. Tibet, Simla, Kumaon, Nepal, Sikkim, S. India, *Yünnan, Setchwan, Manchuria, Japan, Caucasus, Luristan, Sinai, Europe, N. Afr., N. Am.* II p. 347.

1867.‡ **P. Mülleri** (Bryol. jav.) Fleischer. S. India, *Sumatra, Java, Luzon.* II p. 347.

1868. **P. Schottmülleri** (Broth.) Fleischer. *Formosa, Japan.* II p. 347.

Genus : **CALLIERGON.**

1869. **C. trifarium** (Weber et Mohr) Kindberg. *Siberia. Europe, N. Am.* II p. 347.

1870. **C. turgescens** (Jensen) Kindberg. *Alatan, Siberia, Europe, N. Am.* II p. 348.

1871. **C. giganteum** (Schimper) Kindberg. *Siberia, Europe, N. Am.* II p. 348.

1872. **C. sarmentosum** (Wahlenberg) Kindberg. *Thian Shan, Siberia, Europe, N. Am., Fuegia, S. Georgia, New Zealand.* II p. 348.

1873.* **C. nubigenum** (Mitten) Brotherus. Sikkim. II p. 348.

1874. **C. cordifolium** (Hedwig) Kindberg. *Siberia, Amur, Europe, N. Am., New Zealand.* II p. 348.

1875. **C. stramineum** (Dickson) Kindberg. *Siberia, Europe, N. Am.* II p. 348.

Genus : **CALLIERGONELLA**

1876. **C. cuspidata** (Lin.) Loeske. *Syria, Caucasus, Ussuri, Japan, Europe, N. Afr., N. Am., Argentine.* II p. 349.

Genus : **SCORPIDIUM.**

1877. **S. scorpioides** (Lin.) Limpricht. *N. Asia, Europe, N. Am., Bolivia.* II p. 349.

Family : **BRACHYTHECIACEAE.**

Genus : **SCORPIURIUM.**

1878. **S. circinatum** (Bridel) Fleischer et Loeske. *Persia, Asia Minor, Europe, N. Afr.* II p. 351.

Genus : **CAMPTOTHECIUM.**

1879. **C. caucasicum** (Lindberg) Limpricht. *Caucasus.* II p. 353.

1880. **C. lutescens** (Hudson) Bryol. eur. *Caucasus, Taurus, Canary Isles, N. Am.* II p. 353.

Genus : **TOMENTHYPNUM.**

1881. **T. nitens** (Schreber) Loeske. *N. Asia, Europe.* II p. 354.

Genus : **HOMALOTHECIUM.**

1882. **H. tokiodense** (Mitten) Bescherelle. *Formosa, China, Japan.* II p. 355.

1883. **H. Celebesiae** (C. Müller) Brotherus. *Celebes.* II p. 355.

1884. **H. Philippeanum** (Spruce) Bryol. eur. II p. 355. *Caucasus, Alatan, Europe, N. Afr.* II p. 355.

1885. **H. sericeum** (Lin.) Bryol. eur. *Persia, Caucasus, Kurdistan, Syria, Europe, Canary Isles, Madeira, N. Am.* II p. 355.

1886.* **H. decorum** (Mitten) Jaeger. Nepal. II p. 355.

1887.† **H. incompletum** (Mitten) Jaeger. *Assam.* II p. 355.

Genus : **PLEUROPUS.**

1888.*†‡ **P. fenestratus** Griffith. N. W. Himalaya, Sikkim, Assam, Madura, Nilgiris, Palnis, Ceylon, *China.* II p. 357.

1889. **P. luzonensis** Brotherus. *Java, Philippines.* II p. 357.

1890. **P. brevisetus** Brotherus *Lombok.* II p. 357.

1891.* **P. euchloron** (Bruch) Brotherus. Hazara, *Persia, Caucasus.* II p. 357.

Genus : **BRACHYTHECIUM.**

1892. **B. gracillimum** Fleischer. *Java.* II p. 360.

1893.*†‡ **B. Buchanani** (Hooker) Jaeger. Hazara, Garhwal, Nepal, Bhotan, Assam, Burma, Nilgiris, *Japan.* II p. 360.

1894.*† **B. procumbens** (Mitten) Jaeger. Kashmir, N. W. Himalaya, Nepal, Madura, Nilgiris, Palnis, Ceylon. II p. 360.

1895.* **B. Bellii** (Mitten) Paris. Himalaya. II p. 360.

1896. **B. erythrorrhizon** Bryol. eur. *Siberia, Europe,* N. Am. II p. 361.

1897. **B. albicans** (Necker) Bryol. eur. *Caucasus, Europe, N. Am.* II p. 361.
1898. **B. glareosum** (Bruch) Bryol. eur. *Caucasus, Siberia.* II p. 361.
1899.* **B. kumaonense** (Harvey) Jaeger. Kumaon, Sikkim. II p. 362.
1900.* **B. campestre** (Bruch) Bryol. eur. Kashmir, *Caucasus, Siberia, Europe, N. Am.* II p. 362.
1901.* **B. salebrosum** (Hoffmann) Bryol. eur. W. Tibet, N. W. Himalaya, *Caucasus, Asia, Europe, N. Afr., N. Am.* II. p. 362.
1902. **B. lamprocarpum** (C. Müller) Jaeger. *Java, Celebes.*
1903.* **B. longicuspidatum** (Mitten) Jaeger. Sikkim. II p. 362.
1904.* **B. rutabulum** (Lin.) Bryol. eur. W. Tibet, Kashmir, N. W. Himalaya, *Persia, Syria, Caucasus, Siberia, Japan, Europe, N. and S. Am., Tasmania, New Zealand.* II p. 363.
1905. **B. rivulare** Bryol. eur. Gilgit, *C. and N. Asia, Caucasus, Japan, Europe, Kerguelen.* II p. 363.
1906.* **B. glaciale** Bryol. eur. Tibet, *Europe, New Foundland.* II p. 363.
1907.* **B. reflexum** (Starke) Bryol. eur. Kashmir, *Caucasus, Siberia, Amur, Sachalin, Europe, N. Am.* II p. 363.
1908.* **B. curtum** Lindberg. Kashmir, *Siberia, Europe, N. Am.* II p. 363.
1909. **B. Starkei** (Bridel) Bryol. eur. *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 364.
1910. **B. trachypodium** (Funck) Bryol. eur. *Persia, Caucasus, Kurdistan, Siberia, Europe.* II p. 364.
1911.* **B. velutinum** (Lin.) Bryol. eur. Kashmir, *Persia, Caucasus, Siberia, Sachalin, Europe.* II p. 364.
1912.* **B. kashmirense** (Brotherus) Paris. Kashmir. II p. 364.
1913.* **B. falcatulum** (Brotherus) Paris. Kashmir. II p. 364.
1914.* **B. subfalcatum** Renauld et Cardot. Kumaon. II p. 364.
1915. **B. caucasicum** Thériot. *Caucasus.* II p. 364.
1916. **B. collinum** (Schleicher) Bryol. eur. *Kurdistan, Caucasus, Siberia, Europe, N. Am.* II p. 364.
1917.* **B. brachycladium** (Brotherus) Paris. Kashmir. II p. 364.
1918.* **B. curvatulum** (Brotherus) Paris. Kashmir. II p. 365.
1919. **B. populeum** (Hedwig) Bryol. eur. N. W. Himalaya, *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 365.
1920.* **B. spuriopopuleum** (Brotherus) Paris. Kashmir. II p. 365.
1921.* **B. cuspidiferum** (Mitten) Jaeger. Sikkim. II p. 365.
1922.*‡ **B. plumosum** (Swartz) Jaeger. S. India, Sikkim, *Caucasus, Asia, Europe, N. Afr., N. Am., New Zealand.* II p. 365.
1923.*‡ **B. oedistegum** (C. Müller) Jaeger. Himalaya, Nilgiris, *Yünnan.* II p. 366.

1924.‡ **B. oxyrrhynchum** (Dozy et Molkenboer) Jaeger. Ceylon. *Java, Lombok.* II p. 366.

1925.* **B. latifrons** C. Müller (ined.) Garhwal.

1926. **B. yunnanense** Herzog. Yünnan. II p. 534.

1927.* **B. emodiglareosum** Brotherus. Hazara.

1928.* **B. indicopopuleum** Dixon. N. W. Frontier Prov., Kashmir.

1929.* **B. obsoletinerve** Dixon. Chilas, Kashmir.

1930.‡ **B. nitidissum** Dixon et varde, Palni Hills.

Genus : **BRYHNIA.**

1931.* **B. decurvans** (Mitten) Dixon. N. W. Himalaya. II p. 367.

Genus : **CIRRHOPHYLLUM.**

1932. **C. velutinoides** (Bruch) Loeske et Fleischer, *Persia, Caucasus, Europe.* II p. 368.

1933. **C. molliculum** (Lindberg) Brotherus. *Caucasus.* II p. 368.

1934. **C. cirrhosum** (Schwaegrichen) Grout. *Turkestan, Caucasus, China, Europe, Greenland, N. Am.* II p. 368.

1935. **C. piliferum** (Schreber) Grout. *Caucasus, Siberia, Europe, N. Am.* II p. 368.

1936.* **C. cameratum** (Mitten) Brotherus. Himalaya. II p. 369.

Genus : **MYUROCLADA.**

1937. **M. concinna** (Wilson) Bescherelle. *Siberia, Amur, Manchuria, Korea, Japan, China, N. Am.* II p. 370.

Genus : **RHYNCHOSTEGIUM.**

1938.*†‡**Rh. vagans** (Harvey) Jaeger. N. W. Himalaya, Nepal, Sikkim, Burma, S. India, *Java, Ceram, Ternate, Borneo, Formosa, Philippines.* II p. 374.

1939.* **Rh. planiusculum** (Mitten) Jaeger. N. W. Himalaya, Sikkim. II p. 374.

1940.*†‡**Rh. herbaceum** (Mitten) Jaeger. Sikkim, Abor, Khasia, Ceylon. II p. 374.

1941.*‡ **Rh. Hookeri** Sowerby. Sikkim, Ceylon. II p. 374.

1942.‡ **Rh. javanicum** Bescherelle. S. India, Ceylon, Malacca, *Sumatra, Java, New Hebrides.* II p. 374.

1943. **Rh. celebicum** (Bryol. jav.) Jaeger. *Tonkin, Sumatra, Java, Celebes, Philippines.* II p. 374.

1944. **Rh. menadense** (Bryol. jav.) Jaeger. *Java, Celebes, Philippines. New Hebrides.* II p. 374.

1945. **Rh. submenadense** Thériot et Varde. *Annam, Tonkin.* II p. 374.

1946. **Rh. santaiense** (Brotherus et Paris) Brotherus. *Annam.* II p. 374.
1947. **Rh. aciculum** (Brotherus et Paris) Brotherus. *Annam.* II p. 374.
1948. **Rh. sarcoblastum** Brotherus et Paris. *Tonkin.* II p. 374.
1949. **Rh. megapolitanum** (Blandow) Bryol. eur. *Persia, Caucasus, Syria, Europe, N. Afr.* II p. 375.
1950. **Rh. confertum** (Dickson) Bryol. eur. *Caucasus, China, Europe, N. Afr.* II p. 375.
1951. **Rh. murale** (Necker) Bryol. eur. *Caucasus, Syria, Europe, N. Afr.* II p. 375.
1952. **Rh. rotundifolium** (Scopoli) Bryol. eur. *Caucasus, Japan, Europe.* II p. 375.
1953. **Rh. Hausknechtii** Juratzka. *Kurdistan.* II p. 375.
1954.‡ **Rh. brachytherioides** Dixon et Varde. Tirumalai.

Genus: **RHYNCHOSTEGIELLA.**

1955.* **Rh. ramicola** Brotherus. Sikkim. II p. 376.
1956.* **Rh. divaricatifolia** (Renauld et Cardot) Brotherus. Sikkim. II p. 376.
1957. **Rh. Vriesei** (Dozy et Molkenboer) Brotherus. *Borneo, Java.* II p. 376.
1958. **Rh. brachypodia** Fleischer. *Java.* II p. 376.
1959. **Rh. sumatrana** Fleischer. *Sumatra.* II p. 376.
1960. **Rh. Teesdalei** (Smith) Limpricht. *Caucasus, Europe, N. Afr.* II p. 377.
1961.‡ **Rh. humillima** (Mitten) Brotherus. N. W. Himalaya, S. India, Ceylon. II p. 377.
1962.‡ **Rh. Fabroniadelpus** (C. Müller) Brotherus. Ceylon. II p. 377.
1963. **Rh. algiriana** (Bridel) Brotherus. *Caucasus, Sinai, Mediterranea, Europe, Madeira.* II p. 377.
1964.* **Rh. Schroetschkeoides** Dixon (?) Garhwal.
1965.† **Rh. assamica** Cardot et Dixon. Abor.
1966.‡ **Rh. leiopoda** Dixon et Varde. Palni Hills.

Genus: **OXYRRHYNCHIUM.**

1967. **O. praelongum** (Hedwig) Warnstorf. *Caucasus, Kurdistan, Siberia, Japan, Europe, N. Afr., N. Am.* II p. 377.
1968. **O. hians** (Hedwig) Loeske. *Caucasus, Europe, N. Am.* II p. 377.
1969. **O. Swartzii** (Turner) Warnstorf. *Caucasus, Siberia, Europe, N. Afr.* II p. 377.
1970. **O. asperisetum** (C. Müller) Brotherus. *Java.* II p. 378.
1971.* **O. Muelleri** (Dozy et Molkenboer) Brotherus. Garhwal.

1972.* **O. rusciforme** (Necker) Warnstorf. N. W. Himalaya, Hazara.
1972a.‡ **O. ovatum** Cardot et Varde. Palni Hills.

Genus : **EURHYNCHIUM.**

1973.* **E. strigosum** (Hoffmann) Bryol. eur. Kashmir, Panjab, Chitral, *Turkestan, Siberia, Europe, N. Afr., N. Am.* II p. 379.
1974. **E. stokesii** (Turner) Bryol. eur. *Caucasus, Europe, N. Afr., N. Am.* II p. 379.
1975.* **E. dumosum** (Mitten) Jaeger. Sikkim. II p. 379.
1976. **E. striatum** (Schreber) Schimper. *Formosa, Altai, Caucasus, Asia Minor, Europe, N. Afr.* II p. 379.

Subseries : HYPNINEAE.

Family : **ENTODONTACEAE.**

Genus : **ERYTHRODONTIUM.**

1977.*†‡ **E. julaceum** (Hooker) Paris. N. W. Himalaya, Nepal, Sikkim, Khasia, Assam, Burma, Anamallais, Madura, Palnis, Attapadi Hills, Ceylon, *Sumatra, Java, Celebes, Philippines, Tonkin, Yünnan.* II p. 382.

Genus : **PTERIGYNANDRUM.**

1978. **P. filiforme** (Timm) Hedwig. *Caucasus, Siberia, Japan, Europe, N. Afr., N. Am.* II p. 383.
1979.* **P. decolor** (Mitten) Brotherus. Sikkim. II p. 383.

Genus : **TRACHYPHYLLUM.**

1980.*†‡ **T. inflexum** (Harvey) Gepp. Nepal, Sikkim, C. Prov., Kanara, Burma, Malacca, *Cambodia, Philippines, New Caledonia.* II p. 384.
1981.‡ **T. elongatum** Dixon et Varde. S. India.

Genus : **CAMPYLODONTIUM.**

1982.*†‡ **C. flavescens** (Hooker) Bryol. jav. Nepal, Sikkim, Khasia, Assam, Burma, Palnis, Mysore, Ceylon, Malacca, *Sumatra Java, Celebes, Queensland, Philippines, Annam.* II p. 386.
1983.‡ **C. perplicatum** (Thériot et Varde) Brotherus. S. India. II p. 534.

Genus : **ORTHOTHECIUM.**

1984.* **O. intricatum** (Hartmann) Bryol. eur. Panjab, Kashmir, *Caucasus, Europe.* II p. 386.

1985.* **O. strictum** Lorentz. Tibet, *Turkestan, Siberia, Europe, N. Am.* II p. 386.

1986.* **O. chryseum** (Schwaegrichen) Bryol. eur. Tibet, *Europe, N. Am.* II p. 386.

Genus : **ROZEA.**

1987.* **R. pterogonoides** (Hooker) Jaeger. N. W. Himalaya, Nepal, Sikkim, *Yünnan.* II p. 388.

1988. **R. myura** Herzog. *Yünnan.* II p. 534.

Genus : **ENTODON.**

1989. **E. orthocarpus** (Pylais) Lindberg. *Persia, Turkestan, Caucasus, Siberia, Europe, N. Am.* II p. 389.

1990.* **E. caliginosus** (Mitten) Jaeger. Nepal. II p. 389.

1991.* **E. flavescens** (Schwaegrichen) Jaeger. N. W. Himalaya, Nepal, Sikkim. II p. 389.

1992.*†‡ **E. rubicundus** (Wilson) Jaeger. N. W. Himalaya, Nepal, Sikkim, Bhotan, Khasia, S. India, Andamans. II p. 389.

1993.*† **E. Griffithii** (Mitten) Jaeger. N. W. Himalaya, Bhotan, Assam, *Yünnan.* II p. 389.

1994.* **E. myurus** (Hooker) Jaeger. Simla, Kumaon, Nepal, *Yünnan. Korea.* II p. 391.

1995.*† **E. prorepens** (Mitten) Jaeger. N. W. Himalaya, Kumaon, Nepal, Assam. II p. 391.

1996.*‡ **E. Thomsoni** (Mitten) Jaeger. N. W. Himalaya, Simla, W. Ghats. II p. 391.

1997.† **E. pulchellus** (Griffith) Jaeger. Khasia. II p. 391.

1998.† **E. laetus** (Griffith) Jaeger. Khasia. II p. 391.

1999. **E. micropodus** Bescherelle. *Yünnan.* II p. 391.

2000.* **E. luteovirens** Renauld et Cardot. Sikkim. II p. 391.

2001.† **E. luridus** (Griffith) Jaeger. Khasia. II p. 391.

2001*a*. **E. Drummondii** (Bryol. eur.) jaeger. *Tonkin, Japan, N. Am.* II p. 391.

2001*b*. **E. Delavayi** Bescherella. *Yünnan.* II p. 391.

2002. **E. Schleichrei** (Bryol. eur.) Brotherus. *Caucasus, Manchuria, Europe.* II p. 391.

2003.* **E. angustifolius** (Mitten) jaeger. Sikkim, *Tonkin.* II p. 391.

2004.*†‡ **E. plicatus** C. Müller. N. W. Himalaya, Nepal, Sikkim, Assam, Khasia, Burma, Madras, Kanara, Madura, Nilgiris, Palni Hills, Ceylon. II p. 391.

2005.* **E. subplicatus** Renauld et Cardot. Sikkim. II p. 391.

2006.* **E. chloropus** Renauld et Cardot. Sikkim. II p. 391.

2007.* **E. scariosus** Renauld et Cardot. Sikkim. II p. 391.

2008.‡ **E. longifolius** (C. Müller) Jaeger. Bombay. II p. 391.

2009. **E. cernuus** (C. Müller) Jaeger. *Java.* II p. 391.
2010. **E. Bandongiae** (C. Müller) Jaeger. *Sumatra, Java, Celebes, Formosa.* II p. 391.
2010*a*.‡ **E. obtusatus,** Cardot et Varde. S. India.

Genus : **LEVIERELLA.**

2011.*‡ **L. fabroniacea.** C. Müller. N. W. Himalaya, W. Ghats, C. Prov., *Setchwan, Abyssinia, Transvaal.* II p. 391.

Genus : **PSEUDOSCLEROPODIUM.**

2012. **Ps. purum** (Lin.) Fleischer. *Caucasus, Japan, Europe, N. Afr.* II p. 395.

Genus : **PLEUROZIUM.**

2013.* **P. Schreberi** (Willdenow) Mitten. Sikkim, *Yunnan, Turkestan, N. Asia, Japan, Europe, N. and S. Am.* II p. 396.

Family : **PLAGIOTHECIACEAE.**

Genus : **STEREOPHYLLUM.**

2014.‡ **S. indicum** (Bélanger) Mitten. S. India, Ceylon. II p. 397.
2015.‡ **S. confusum** Cardot. S. India. II p. 397.
2016. **S. Mölleri** Brotherus. *Java.* II p. 397.
2017.‡ **S. papillidens** Cardot. S. India. II p. 397.
2018.† **S. anceps** (Bryol. jav.) Brotherus. Kanara, Mahableswar, *Java,* Cochin China, *Philippines.* II p. 399.
2019. **S. Bremondii** Thériot et Varde. *Cambodia.* II p. 399.
2020.‡ **S. ligulatum** (C. Müller) Jaeger. W. Ghats, Poona, Botampatti and Palni Hills. II p. 399.
2021.*†‡ **S. Wightii** (Mitten) Jaeger. Himalaya, Khasia, Madras, Palni Hills, Coorg, Ceylon, Burma. II p. 399.
2022.‡ **S. Blatteri** Cardot. Thana Distr.
2023.† **S. tavoyense** (Hooker) Jaeger. Tavoy. II p. 399.
2024.* **S fulvum** (Harvey) Jaeger. Nepal, Sikkim. II p. 399.

Genus : **PLAGIOTHECIUM.**

2025. **P. Roeseanum** (Hampe) Bryol. eur. *Caucasus, Siberia, Japan, Europe, Falkland Isles.* II p. 402.
2026.* **P. silvaticum** (Hudson) Bryol. eur. N. W. Himalaya, Panjab, *Caucasus, Siberia, Sachalin, Japan, Europe, N. Am.* II p. 402.

2027.* **P. nemorale** (Mitten) Jaeger. Kashmir, Sikkim, Bhotan, *Tonkin, Japan.* II p. 402.
2028.* **P. denticulatum** (Lin.) Bryol. eur. Sikkim, *Caucasus, Siberia, Sachalin, Japan, Europe, N. Am.* II p. 403.
2029.* **P. paleaceum** (Wilson) Jaeger. Sikkim. II p. 403.
2030.*‡ **P. neckeroideum** Bryol. eur. Sikkim, S. India, Japan. II p. 403.
2031.‡ **P. vesiculariacopsis** Dixon et Varde Palni Hills.

Family: **SEMATOPHYLLACEAE.**

Genus: **APTYCHELLA.**

2032.*† **A. planula** (Mitten) Fleischer. Sikkim, Khasia. II p. 406.
2033.*† **A. delicata** (Brotherus) Fleischer. Sikkim, Khasia. II p. 406.
2034. **A. heteroclada** Fleischer. *Java.* II p. 406.
2035. **A. tonkinensis** (Brotherus et Paris) Brotherus. *Tonkin.* II p. 406.
2036. **A. scalaris** (A. Braun) Fleischer. *Java.* II p. 406.
2037. **A. brevinervis** Fleischer. *Java.* II p. 406.
2038.‡ **A. serrulata** (Cardot et Varde) Brotherus. S. India.

Genus: **CLASTOBRYUM.**

2039. **C. conspicuum** Fleischer. *Java.* II p. 407.
2040. **C. indicum** Dozy et Molkenboer. *Java, Borneo.* II p. 407.
2041. **C. caudatum** (Bryol. jav.) Fleischer. *Java.* II p. 407.
2042.† **C. prionotrichum** (Hampe) Dixon. Burma. II p. 535.
2043.‡ **C. oligonema** Cardot et Varde. S. India, Ceylon. II p. 535.
2044.‡ **C. patentifolium** Dixon et Varde. Palni Hills.
2045.‡ **C. barbelloides** Dixon et Varde. Palni Hills.

Genus: **CLASTOBRYELLA.**

2046.‡ **C. cuculligera** (Lacoste) Fleischer. Ceylon, *Java.* II p. 407.
2047.‡ **C. ruficaulis** ((Thwaites et Mitten) Fleischer. Ceylon. II p. 407.
2048.‡ **C. ceylonensis** Brotherus. Ceylon. II p. 407.
2049.‡ **C. serrulata** (Dixon) Brotherus. Malacca. II p. 535.
C. gracilis, Varde. Palnis.

Genus: **HAGENIELLA.**

2050.* **H. sikkimensis** Brotherus. Sikkim. II p. 407.

Genus: **CLASTOBRYOPHILUM.**

2051. **C. bogoricum** (Bryol. jav.) Fleischer. *Java.* II p. 408.

Genus : **STRUCKIA.**

2052.* **C. argentata** (Mitten) C. Müller. Kumaon, *Yünnan.* II p. 408.

Genus : **GAMMIELLA.**

2053.*† **G. pterogonoides** (Griffith) Brotherus. Sikkim, Khasia. II p. 410.

Genus : **PYLAISIOPSIS.**

2054.* **P. speciosa** (Wilson) Brotherus. Sikkim. II p. 410.

Genus : **HETEROPHYLLIUM.**

2055.* **H. Haldanianum** (Greville) Kindberg. Kashmir, *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 411.

2056. **H. tonkinense** (Brotherus et Paris) Brotherus. *Tonkin.* II p. 411.

2057. **H. piligerum** (Brotherus et Paris) Brotherus. *Tonkin.* II p. 411.

2058.* **H. renitens** (Mitten) Brotherus. Sikkim. II p. 411.

2059. **H. nemorosum** (Koch) Kendberg. *Caucasus, Europe, N. Am.* II p. 411.

2060.* **H. confine** (Mitten) Fleischer. Bhotan. II p. 411.

2061. **H. microalare** (Brotherus et Paris). Brotherus. *Tonkin.* II p. 535.

Genus : **MASTOPOMA.**

2062. **M. rhaphidostegioides** Cardot. *Celebes.* II p. 412.

Genus : **ACANTHOCLADIUM.**

2063.*† **A. surculare** (Mitten) Brotherus. Nepal, Sikkim, Khasia, Burma. II p. 413.

2064. **A. filiferum** Brotherus et Paris. *Tonkin.* II p. 413.

2065.‡ **A. ceylonense** Brotherus et Dixon. Ceylon. II p. 414.

2066. **A. Hornschuchii** (Dozy et Molkenboer) Fleischer. *Java.* II p. 414.

2067.* **A. penicillatum** (Mitten) Brotherus. Sikkim, Bhotan. II p. 414.

2068.* **A. deflexifolium** (Mitten) Renauld et Cardot. Sikkim, Bhotan. II p. 414.

2069.* **A. lepidum** (Mitten) Fleischer. Sikkim. II p. 414.

2070.* **A. laxitextum** (Renauld et Cardot) Brotherus. Sikkim. II p. 414.

2071.* **A. tanytrichum** (Montagne) Brotherus. Sikkim, Bhotan, *Sumatra, Java.* II p. 414.

2072.* **A. semitortipilum** (C. Müller) Fleischer. Bhotan. II p. 414.

Genus : **TRISMEGISTIA.**

2073. **T. brachyphylla** Fleischer. *Sumatra.* II p. 415.
2074. **T. Brauniana** (Bryol. jav.) Fleischer. *Sumatra. Java.* II p. 415.
2075. **T. dendroides** Herzog. *Ceram.* II p. 415.
2076. **T. panduriformis** (Wright) Brotherus. *Borneo.* II p. 415.
2077.*‡ **T. lancifolia** (Harvey) Brotherus. Nepal, Malacca, *Sumatra, Java, Borneo, Philippines, New Guinea.* II p. 415.
2078. **T. salaensis** (Hampe) Brotherus. *Borneo.* II p. 415.
2079. **T. rigida** (Hornschuch et Reinwardt) Brotherus. *Annam, Siam, Sumatra, Java, New Guinea, New Caledonia.* II p. 415.
2080. **T. Deningeri** Herzog. *Ceram.* II p. 416.

Genus : **MEIOTHECIUM.**

2081.‡ **M. hamatum** (C. Müller) Brotherus. Ceylon, *Sumatra, Java.* II p. 420.
2082. **M. fornicatum** (Cardot) Brotherus. *Java, Celebes.* II p. 420.
2083. **M. turgitellum** Fleischer. *Java.* II p. 420.
2084.*‡ **M. microcarpum** (Harvey) Mitten. Nepal, Ceylon, Andamans, Malacca, *Indian Archipelago, Philippines, New Guinea, New Caledonia.* II p. 420.
2085.†‡ **M. jagori** (C. Müller) Brotherus. S. India, Ceylon, Andamans, Burma, Malacca, *Java, Amboina, Celebes, Borneo, Philippines.* II p. 421.
2086. **M. bogoriense** Fleischer. *Java.* II p. 421.
2087. **M. gymnostomum** Fleischer. *Java.* II p. 421.

Genus : **CHIONOSTOMUM.**

2088.*†‡ **Ch. rostratum** (Griffith) C. Müller. Sikkim, Khasia, Coorg, Ceylon, *Philippines, Formosa.* II p. 423.

Genus : **PYLAISIDAELPHA.**

2089.* **P. drepanioides** Cardot et Dixon. Sikkim. II p. 424.

Genus : **BROTHERELLA.**

2090.*† **B. curvirostris** (Schwaegrichen) Fleischer. Nepal, Sikkim, Bhotan, Khasia. II p. 424.
2091. **B. formosana** Brotherus. *Formosa.* II p. 424.
2092.* **B. perpinnata** (Brotherus) Fleischer. Himalaya. II p. 425.
2093.* **B. erythrocaulis** (Mitten) Fleischer. Sikkim, Bhotan, *Yünnan.* II p. 425.
2094.*† **B. propingua** (Harvey) Fleischer. Nepal, Sikkim, Assam II p. 425.
2095.* **B. pallida** (Renauld et Cardot) Fleischer. Sikkim. II p. 425.

2096. **B. Mercieri** (Brotherus et Paris) Fleischer. *Tonkin.* II p. 425.
2097. **B. Handelii** Brotherus. *Yünnan.* II p. 425.
2098. **B. falcata** (Dozy et Molkenboer) Fleischer. *Java, Ceram, Celebes, New Guinea, Borneo, Formosa.* II p. 425.
2099.* **B. amblyostegia** (Mitten) Brotherus. Sikkim. II p. 425.
2100.* **B. nictans** (Mitten) Brotherus. Sikkim. II p. 425.
2101. **B. Pylaisiadelpha** (Bescherelle) Brotherus. *Yünnan.* II p. 425.
2102. **B. indosinensis** (Brotherus et Paris) Brotherus. *Annam.* II p. 535.

Genus : **FOREAUELLA.**

2103.‡ **F. indica** Dixon et Varde. S. India.

Genus : **RHAPHIDIORRHYNCHIUM.**

2104. **Rh. parvulum** Brotherus. *Siam.* II p. 426.
2105.‡ **Rh. leptorrhynchfoides** (C. Müller) Brotherus. Nilgiris, Palnis, Ceylon. II p. 427.
2106. **Rh. subcylindricum** (Brotherus) Fleischer. *Java.* II p. 427.
2106*a*. **Rh. confertissimum** (Mitten) Brotherus. Assam. II p. 428.

Genus : **WARBURGIELLA.**

2107. **W. subleptorrhynchfoides** Fleischer. *Java.* II p. 434.
2108.‡ **W. leptorrhynchoides** (Montagne) Fleischer. Nilgiris, Palnis, Ceylon, *Sumatra.* II p. 439.
2109.‡ **W. leptocarpa** (Schwaegrichen) Fleischer. Ceylon, *Sumatra, Java, Lombok, Borneo, Celebes.* II p. 429.
2110.‡ **W. falcatula** Brotherus. Ceylon. II p. 429.
2110*a*. **W. pycnophylla** (C. Müller) Fleischer. *Java.* II p. 429.
2111. **W. cuspidatifolia** Fleischer. *Java.* II p. 429.
2112. **W. hygrophila** Fleischer. *Java.* II p. 429.
2113.‡ **W. complanata** (Dixon) Brotherus. Malacca. II p. 535.
2114.‡ **W. malayana** (Dixon) Brotherus. Malacca. II p. 535.
2115.‡ **W. surcularis** (Dixon) Brotherus. Malacca. II p. 535.
2116.‡ **W. perviridis,** Dixon et Varde. S. India.

Genus : **SEMATOPHYLLUM.**

2117.*‡ **S. humile** (Harvey) Brotherus. Nepal, Ceylon. II p. 431.
2118.‡ **S. scabriusculum** Brotherus. Ceylon. II p. 431.
2119. **S. microcladum** (Dozy et Molkenboer) Brotherus. *Borneo, Celebes, New Guinea.* II p. 431.
2120. **S. subrevolutum** Brotherus. *Siam.* II p. 431.
2121.‡ **S. subhumile** (C. Müller) Fleischer. Nilgiris, Palnis. II p. 431.
2122.‡ **S. frullaniadelphus** (C. Müller) Brotherus Ceylon. II p. 431.

2123.‡ **S. ceylonense** (Hampe) Brotherus. Ceylon. II p. 431.
2124.‡ **S. phoeniceum** (C. Müller) Fleischer. S. India, Andamans. II p. 431.
2125. **S. saproxylophilum** (C. Müller) Fleischer. *Java.* II p. 432.
2126. **S. capilliferum** Thwaites et Mitten. Ceylon. II p. 432.
2127. **S. tristiculum** (Mitten) Fleischer. Assam, Khasia, Ceylon, *Annam.* II p. 433.
2128. **S. robustulum** (Cardot) Brotherus. *Formosa.* II p. 433.
2129. **S. pilotrichelloides** Cardot et Dixon. Ceylon.
2129*a*. **S. caespitosum** (Bruch). Palni Hills.

Genus: **RHAPHIDOSTICHUM.**

2130. **Rh leptocarpum** ((Bryol. jav.) Fleischer. *Java.* II p. 434.
2131.‡ **Rh. subleptocarpum** (Thériot et Varde) Brotherus. S. India. II p. 434.
2131*a*. **Rh. Eberharti** (Varde et Thériot) Brotherus. *Annam.* II p. 434.
2132. **Rh. leptocarpoides** Brotherus. *Siam.* II p. 434.
2132*a*. **Rh. Sebillei** (Brotherus et Thériot) Palni Hills.
2133.‡ **Rh. cucullifolium** (Cardot et Dixon) Brotherus. S. India. II p. 434.
2134.‡ **Rh. replicatum** (Hampe) Fleischer. Ceylon. II p. 435.
2135. **Rh. subrevolutum** Brotherus. *Siam.* II p. 435.
2136.† **Rh. glaucovirens** (Mitten) Brotherus. Assam. II p. 435
2137. **Rh. luxurians** (Dozy et Molkenboer) Fleischer. *Sumatra, Java.* II p. 435.
2138.‡ **Rh. ramulinum** (Thwaites et Mitten) Brotherus. Ceylon. II p. 435.
2139.‡ **Rh. Bruchii** (Dozy et Molkenboer) Fleischer. Malacca, *Sumatra.* II p. 435.

Genus: **ACROPORIUM.**

2140. **A. lamprophyllum** Mitten. *Sumatra, Java, Borneo, Celebes, New Guinea, Samoa.* II p. 435.
2141. **A. decipiens** (Dixon) Brotherus. *Borneo.* II p. 435.
2142.‡ **A. punctuliferum** (Thwaites et Mitten, Fleischer. Ceylon, *New Guinea.* II p. 435.
2143. **A. diminutum** (Bridel) Fleischer. *Sumatra, Java, Moluccas, Philippines.* II p. 435.
2144. **A. Vincensinum** (Thériot) Brotherus. *Annam.* II p. 435.
2145. **A. convolutum** (Bryol. jav.) Fleischer. Singapur, *Sumatra, Java, Borneo.* II p. 435.
2146. **A. adspersum** (Hampe) Brotherus. *Borneo.* II p. 435.

2147.‡ **A. sigmatodontium** (C. Müller) Fleischer. Ceylon, *Sumatra, Java, New Guinea, Philippines.* II p. 436.
2148. **A. ramicola** (Hampe) Brotherus. *Borneo.* II p. 436.
2149. **A. Downii** (Dixon) Brotherus. *Borneo.* II p. 437.
2150. **A. rufum** (Reinwardt et Hornschuch) Fleischer. *Sumatra, Java, Borneo, Celebes, Philippines.* II p. 437.
2151. **A. affine** (Brotherus et Paris) Brotherus. *Annam.* II p. 437.
2152. **A. secundum** (Reinwardt et Hornschuch) Fleischer. *Sumatra, Java, Ceram, Celebes, Borneo.* II p. 437.
2153. **A. dicranoides** Fleischer. *Sumatra.* II p. 437.
2154. **A. rigens** Brotherus. *Borneo.* II p. 437.
2155. **A. hermaphroditum** (C. Müller) Fleischer. *Sumatra, Java, Celebes, Moluccas, Philippines, New Guinea, New Caledonia.* II p. 437.
2156.‡ **A. obscurum** (Brotherus) Dixon. Malacca. II p. 535.
2157.‡ **A. longicuspis** (Brotherus) Dixon. Malacca. II p. 535.
2158.‡ **A. calbidissimum** Dixon Malacca. II p. 535.
2159. **A. Ridleyi** Dixon. Malacca. II p. 535.
2160. **A. Nietnerianum** (C Müller) Brotherus. Ceylon. II p. 437.
2161.‡ **A. consanguineum** (Hampe) Fleischer Ceylon. II p. 437.
2162.‡ **A. gracilescens** Brotherus. Ceylon II p. 437.
2163.‡ **A. monoicum** (Bryol. jav.) Fleischer. Ceylon, *Sumatra, Java, Borneo, New Guinea.* II p. 437.
2164. **A. baviense** (Bescherelle) Brotherus. *Tonkin.* II p. 437.
2165. **A. microthecium** (Brotherus et Paris) Brotherus. *Annam.* II p. 437.
2166. **A. laosianum** (Brotherus et Paris) Brotherus. *Laos.* II p. 437.
2167. **A. oxyporum** (Dozy et Molkenboer) Fleischer. *Java, New Guinea.* II p. 437.
2168. **A. falcifolium** Fleischer. *Sumatra, Java, Celebes, Borneo, Philippines.* II p. 437.
2169. **A. hamulatum** Fleischer. *Java.* II p. 437.
2170. **A. pinnatum** Fleischer. *Java.* II p. 437.
2171. **A. Warburgii** (Brotherus) Fleischer. *Celebes.* II p. 437.
2172. **A. turgidum** (Dozy et Molkenboer) Fleischer. *Sumatra, Java, Borneo, Celebes, Samoa.* II p. 437.
2173. **A. stramineum** (Reinwardt et Hornschuch) Fleischer. *Sumatra, Java, Banca, Celebes, Borneo, Philippines, New Guinea.* II p. 437.
2174. **A. longicaule** (Bryol. jav.) Fleischer. *Java.* II p. 437.
2175. **A. procerum** (C. Müller) Fleischer. *Sumatra, Java.* II p. 437.
2176.‡ **A. denticulatum** Dixon. Malacca. II p. 535.
2177.‡ **A. aciphyllum** Dixon. Malacca. II p. 535.

Genus : **TRICHOSTOLEUM.**

2178. **T. trachycystis** Brotherus. *Siam.* II p. 438.
2179. **T. hamatum** (Dozy et Molkenboer) jaeger. *Indian Archipelago, New Guinea, Philippines, Samoa.* II p. 438.
2180. **T. mammosum** (C. Müller) Jaeger. *Sumatra, Java.* II p. 438.
2181. **T. pseudomammosum** Fleischer. *Java.* II p. 438.
2182. **T. stissophyllum** (Hampe) Jaeger. *Java.* II p. 438.
2183.* **T. brachypelma** (C. Müller) Brotherus. Nepal. II p. 438.
2184. **T. subcuculiifolium** Paris et Brotherus. *Tonkin.* II p. 438.
2185.‡ **T. Boschii** (Dozy et Molkenboer) Jaeger. Penang, Malacca, *Sumatra, Java, Banca, Panay, Borneo, Siam, Annam.* II p. 438.
2186.‡ **T. monostictum** (Thwaites et Mitten) Brotherus. W. Ghats, Coorg, Ceylon. II p. 438.
2187.‡ **T. microphyllum** Cardot et Thériot. Penang. II p. 438.
2188.‡ **T. singapurense** Fleischer. Singapur. II p. 438.
2189. **T. aculeatum** Brotherus et Paris. *Formosa, Japan.* II p. 438.
2190.‡ **T. albifolium** Dixon. Malacca. II p. 535.
2191.‡ **T. Dozyanum** (C. Müller) Brotherus. Ceylon.

Genus . **ACANTHORRHYNCHIUM.**

2192.*‡ **A. papillatum** (Harvey) Fleischer. Nepal, Malacca, *Siam, Indian Archipelago, New Guinea, Philippines, Fidji, Samoa.* II p. 440.
2193. **A. subintegrum** (Brotherus et Dixon) Brotherus. *Borneo.* II p. 440.

Genus : **TAXITHELIUM.**

2194. **T. instratum** (Bridel) Brotherus. *Indian Archipelago, New Guinea, Philippines.* II p. 442.
2195.‡ **T. Arnottii** Thériot. India, *Annam.* II p. 442.
2196.*†‡**T. nepalense** (Schwaegrichen) Brotherus. Nepal, Bengal, Assam, Burma, Penang, Karwar, Kanara, Ceylon, *Indian Archipelago, Philippines.* II p. 442.
2197. **T. subsimilans** (Brotherus et Geheeb) Fleischer. *Borneo.* II p. 442.
2198. **T. capillipes** (Bryol. jav.) Brotherus. *Sumatra, Java.* II p. 442.
2199. **T. sublaevifolium** Brotherus et Paris. *Tonkin.* II p. 443.
2200. **T. isocladum** (Bryol. jav.) Renauld et Cardot. *Annam, Siam, Borneo, Banca, New Guinea.* II p. 443.
2201. **T. kerianum** Brotherus. *Java, New Guinea, E. Australia.* II p. 443.
2202.‡ **T. planissimum** Brotherus et Dixon. Ceylon, II p. 443.

2203.‡ **T. Binsteadii** Brotherus et Dixon. Ceylon. II p. 443.
2204.‡ **T. Deningeri** Herzog. Malacca. II p. 443.
2205. **T. Lindbergii** (Bryol. jav.) Renauld et Cardot. *Annam, Java, Borneo, Ceram, New Guinea.* II p. 443.
2206. **T. magnum** Fleischer. Sumatra, *Java.* II p. 443.
2207. **T. sumatranum** (Bryol. jav.) Brotherus. *Sumatra.* II p. 443.
2208.† **T. trachaelophyllum** (C. Müller) Dixon. Burma. II p. 535.
2209.† **T. subtrachaelophyllum** Dixon. Burma. II p. 535.
2210.‡ **T. isopterygioides** Dixon. S. India.
2211.‡ **T. vivicolor** Brotherus et Dixon. S. India.

Genus: **GLOSSADELPHUS.**

2212. **G. prostratus** (Dozy et Molkenboer) Fleischer. *Java.* II p. 444.
2213.‡ **G. zollingeri** (C. Müller) Fleischer. S. India, *Java, Celebes.* II p. 444.
2214. **G. amboinensis** Fleischer. *Amboina.* II p. 444.
2215. **G. planifrons** (Brotherus et Paris) Fleischer. *Formosa, Japan.* II p. 444.
2216.‡ **G. vivicolor** (Brotherus et Dixon) Brotherus. W. Ghats, Palni Hills, Madura, Ceylon. II p. 444.
2217. **G. bornensis** (Brotherus et Geheeb) Brotherus. *Borneo.* II p. 444.
2218.‡ **G. anisopterus** (Cardot et Varde) Brotherus. S. India. II p. 444.
2219. **G. malacocladus** (Cardot) Brotherus. *Formosa.* II p. 444.
2220. **G. Boutani** (Brotherus et Paris) Brotherus. *Laos.* II p. 444.
2221. **G. scabrifolius** (Brotherus et Paris) Brotherus. *Laos.* II p. 444.
2222.‡ **G. isopterygioides** (Dixon) Brotherus. Ceylon. II p. 444.
2223.‡ **G. subretusus** (Mitten) Fleischer. Ceylon. II p. 444.
2224. **G. similans** (Bryol. jav.) Fleischer. *Java.* II p. 444.
2225. **G. hermaphroditus** Fleischer. *Java.* II p. 444.
2226. **G. glossoides** (Bryol. jav.) Fleischer, *Java, New Guinea.* II p. 444.
2227. **G. lingulatus** (Cardot) Fleischer, *Formosa.* II p. 444.
2228.*‡ **G. Ivoreanus** (Mitten) Fleischer, Nepal, Nilgiris. II p. 444.
2229.‡ **G. bilobatus** (Dixon) Brotherus. Malacca. II p. 535.

Genus: **MACROHYMENIUM.**

2230. **M. mitratum** (Dozy et Molkenboer) Fleischer. *Sumatra, Java, Queensland.* II. p. 444.
2231. **M. strictum** Bryol. jav. *Borneo, Philippines.* II p. 444.
2232.‡ **M. Nietneri** (C. Müller) Mitten. Ceylon. II p. 445.
2233.‡ **M. laeve** Thwaites et Mitten. Ceylon. II p. 445.
2234. **M. Mülleri** Dozy et Molkenboer. *Java, Borneo.* II p. 445.

Family : **HYPNACEAE.**

Genus : **BRYOSEDGWICKIA.**

2235.‡ **B. Kirtikarii** Cardot et Dixon. Poona, W. Ghats. II p. 446.

Genus : **PLATYGYRIUM.**

2236. **P. repens** (Bridel) Bryol. eur. *Persia, Caucasus, Altai, Siberia, Amur, Japan, Europe.* II p. 448.

2237.* **P. russulum** (Mitten) Jaeger. Nepal, Sikkim. II p. 448.

2238.* **P. subrussulum** Renauld et Cardot. Sikkim. II p. 448.

Genus : **PYLAISIA.**

2239.*† **P. aurea** (Hooker) Brotherus. N. W. Himalaya, Garhwal, Khasia. II p. 450.

2240. **P. Schimperi** Cardot. *Altai, Siberia, Europe, N. Am.* II p. 450.

2241.* **P. polyantha** (Schreber) Bryol. eur. Kashmir, *Siberia, Japan, Caucasus, Europe, N. Afr., N. Am.* II p. 450.

2242. **P. chrysophylla** Cardot. *Formosa.* II p. 450.

2243.* **P. extenta** (Mitten) Jaeger. Nepal, Sikkim. II. p. 450.

Genus : **HOMOMALLIUM.**

2244.* **H. incurvatum** (Schrader) Loeske. Kashmir, *Turkestan, Caucasus, Siberia, Japan, Europe.* II p. 451.

2245.* **H. loriforme** Brotherus. Kashmir. II p. 451.

2246.* **H. simlaense** (Mitten) Brotherus. Hazara, N. W. Himalaya. II p. 451.

Genus : **STEREODON.**

2247. **S. microsporus** Brotherus. *Yünnan.* II. p. 452.

Genus : **HYPNUM.**

2248.* **H. reptile** Michaux. Kashmir. *Caucasus, Siberia, Sachalin, Europe, N. Am.* II p. 453.

2249. **H. fertile** Sendtner, *Caucasus, Siberia, Japan, Europe. N. Am.* II p. 453.

2250.* **H. emodifertile** Brotherus. Himalaya. II p. 453.

2251.* **H. imponens** Hedwig. Kashmir, Sikkim, *Japan, Europe, N. Am.* II p. 453.

2252.* **H. Vaucheri** Lesquereux. N. W. Himalaya, *C. Asia, Caucasus, Siberia, Europe, N. Am.* II p. 454.

2253.‡ **H. cupressiforme** Lin. S. India, *C. Asia, Caucasus, Europe, Am., E. Afr. Isles, S. Afr., Austr., New Zealand.* II p. 454.

2254.* **H. revolutum** (Mitten) Lindberg. N. W. Himalaya, Tibet, *Turkestan, Caucasus, Europe, N. Am.* II p. 454.
2255.* **H. perrevolutum** (Brotherus) Paris. Kashmir. II p. 454.
2256.* **H. perspicuum** (Mitten) Zaeger. Sikkim. II p. 454.
2257. **H. plumiforme** Wilson. *Tonkin, Formosa, China, Korea, Japan.* II p. 454.
2258. **H. flaccens** Bescherelle. *Yünnan.* II p. 454.
2259. **H. macrogynum** Bescherelle. *Yünnan.* II p. 454.
2260.*† **H. Zickendrahtii** Brotherus. Sikkim, Assam, Burma. II p. 454.
2261. **H. fissidenticaule** Brotherus et Paris. *Tonkin.* II p. 454.
2262. **H. callichroum** (Bridel) C. Müller. *Caucasus, Siberia, Europe, N. Am.* II p. 455.

Genus : **BREIDLERIA.**

2263. **B. arcuata** (Lindberg) Loeske. *Caucasus, Siberia, Amur, Japan, Europe, N. Am.* II p. 455.

Genus : **PSEUDOSTEREODON.**

2264. **Ps. procerrimum** (Molendo) Fleischer. *Caucasus, C. Asia, Siberia, Europe, N. Am.* II p. 455.

Genus : **ECTROPOTHECIUM.**

2265. **E. falciforme** (Dozy et Molkenboer) Jaeger. *Sumatra, Java Lombok, Borneo, Celebes, Philippines.* II p. 456.
2266. **E. Penzigianum** Fleischer. *Java.* II p. 456.
2267. **E. Dixoni** Fleischer. *Borneo.* II p. 457.
2268. **E. sparsipilum** (Bryol. jav.) Jaeger. *Java.* II p. 456.
2269. **E. hyalinum** (Hornschuch et Reinwardt) Fleischer. *Java.* II p. 456.
2270. **E. leptohocormum** (C. Müller) Fleischer. *Java.* II p. 456.
2271. **E. epiphytum** Fleischer. *Java.* II p. 456.
2272. **E. Buitenzorgii** (Bélanger) Jaeger. *Sumatra, Java, Amboina, Ceram.* II p. 457.
2273.‡ **E. Andrei** Thériot et Varde. S. India. II p. 457.
2274.†‡ **E. compressifolium** (Mitten) Jaeger. Assam, Khasia, Kanara. II p. 457.
2275. **E. interquatum** (Dozy et Molkenboer) Jaeger. *Sumatra, Java, Celebes, Ceram. Ternate, Halmahera.* II p. 457.
2276. **E. haplocladum** Cardot. *Sumatra, Java, Banda.* II p. 457.
2277. **E. Seuberti** Fleischer. *Java.* II p. 457.
2278.* **E. rostellatum** (Mitten) Jaeger. Nepal. II p. 457.
2279.* **E. sikkimense** Renauld et Cardot N. W. Himalaya. Sikkim. II p. 457.

2280. **E. mollissimum** Fleischer. Java. II p. 457.
2281. **E. ichnotocladum** (C. Müller) Jaeger. Burma, *Annam, Sumatra, Java, Amboina, Celebes, Borneo, Philippines.* II p. 457.
2281A. **E. ohosimense** Cardot et Thériot. *Tonkin, Japan.* II p. 457.
2282.‡ **E. singapurense** Dixon. Malacca. II p. 457.
2283. **E. Moritzii** (C. Müller) Jaeger. *Java, Banca, Sumbawa, Celebes, Borneo.* II p. 457.
2284. **E. serratum** Herzog. Malacca. II p. 457.
2285. **E. annamense** Thériot. *Annam.* II p. 457.
2286.*†‡ **E. cyperoides** (Hooker) Jaeger. Garhwal, Nepal, Abor, Assam, S. India, Ceylon, *Sumatra, Celebes, Philippines, Carolines.* II. p. 457.
2287. **E. Boutani** Brotherus et Paris. *Laos.* II p. 457.
2288. **E. Chamissonis** (Hornschuch) Jaeger. *Banca, Moluccas.* II p. 457.
2289. **E. Winkleri** Brotherus. *Borneo.* II p. 457.
2290.‡ **E. incubans** (Reinwardt et Hornschuch) Jaeger. Ceylon, *Java.* II p. 458.
2291. **E. siamense** Dixon. *Siam.* II p. 458.
2292.‡ **E. penangense** Fleischer. Penang. II p. 458.
2293. **E. dealbatum** (Hornschuch et Reinwardt) Jaeger. *Sumatra, Java, Borneo, Philippines.* II p. 458.
2294. **E. monumentorum** (Duby) Jaeger. *Sumatra, Java, Timor, Philippines, Carolines.* II p. 458.
2295.‡ **E. Manii** Brotherus. S. India, *Andamans.* II p. 458.
2296.‡ **E. laevigatum** Thwaites et Mitten. S. India, Ceylon. II p. 458.
2297. **E. saprophilum** Brotherus et Paris. *Tonkin.* II p. 458.
2298. **E. rhynhostegioides** Brotherus et Paris. *Tonkin.* II p. 458.
2299. **E. planulum** Cardot. *Formosa.* II p. 458.
2300. **E. subplanulum** Cardot, *Formosa.* II p. 458.
2301.‡ **E. drapanocladioides** Brotherus et Varde. S. India.
2302.‡ **E. densum** Dixon et Varde. Palni Hills.

Genus : **TRACHYTHECIUM.**

2303. **T. verrucosum** (Hampe) Fleischer. *Sumatra, Java, Amboina, Timorlaut, Borneo, New Guinea, Philippines, New Caledonia.* II p. 459.
2304.‡ **T. tuberculatum** (Mitten), Fleischer. Ceylon. II p. 459.
2305.‡ **T. calcicola** Fleischer. Malacca. II p. 459.

Genus : **ECTROPOTHECIELLA.**

2306. **E. distichophylla** (Hampe) Fleischer. *Siam, Java, Amboina, Celebes, New Guinea, Philippines.* II p. 459.

2307.‡ **E. decrescens** (Dozy et Molkenboer) Fleischer. Malacca, *Java, Celebes.* II p. 459.

Genus : **ECTROPOTHECIOPSIS.**

2308.‡ **E. falcatula** (Brotherus) Fleischer. Malacca. II p. 460.

Genus : **ISOPTERYGIUM.**

2309. **I. Müllerianum** (Schimper) Lindberg. *Caucasus, China, Europe, N. Am.* II p. 460.

2310. **I. depressum** (Bruch) Mitten. *Caucasus, Europe, N. Am.* II p. 460.

2310A. **I. densifolium** Lindberg. *Caucasus.* II p. 460.

2311.‡ **I. Textori** (Lacoste) Mitten. S. India, *Annam, Japan.* II p. 460.

2312.* **I. serrulatum** (Brotherus) Fleischer. Sikkim. II p. 461.

2313. **I. cratericola** Fleischer. *Java.* II p. 461.

2314. **I. fallax** Fleischer. *Java.* II p. 461.

2315.‡ **I. arquifolium** (Bryol. jav.) Jaeger. S. India, Ceylon, *Sumatra, Java, Amboina.* II p. 461.

2316.* **I. distichaceum** (Mitten) Jaeger. Nepal, N. W. Himalaya. II p. 461.

2317. **I. applanatum** Fleischer. *Java.* II p. 461.

2318.* **I. pulchellum** (Dickson) Jaeger. Kashmir, *Caucasus, Siberia, Europe, N. Am.* II p. 461.

2319.*†‡ **I. lignicola** (Mitten) Jaeger. Sikkim, Assam, Coorg, Ceylon, Burma. II p. 461.

2320. **I. leptotapes** Cardot. *Formosa.* II p. 461.

2321.‡ **I. subleptotapes** Cardot et Varde.=*Macrothamniella pilosula* (Mitten). S. India. II p. 461.

2322.‡ **I. minutirameum** (C. Müller) Jaeger. S. India. Ceylon, Malacca, *Sumatra, Java, Banca, Borneo, Philippines, Pacific Isles, Queensland.* II p. 461.

2323. **I. planifolium** Fleischer. *Java.* II p. 461.

2324.*†‡ **I. albescens** (Schwaegrichen) Jaeger. Nepal, Sikkim, Assam, Khasia, Nilgiris, Ceylon, *Siam, Java, Borneo, Celebes, Japan.* II p. 461.

2325. **I. battakense** (Fleischer). *Sumatra.* II p. 461.

2326.* **I. pallidulum** (Mitten) Jaeger. Kumaon. II p. 461.

2327. **I. gracilentum** (Schwaegrichen) Jaeger. *Sumatra, Java, Borneo.* II p. 461.

2328.† **I. assamicum** (Mitten) Jaeger. Assam. II p. 461.

2329.†‡ **I. subalbescens** Brotherus. Assam, Burma, Singapur, *Japan.* II p. 461.

2330. **I. annamense** Brotherus et Paris. *Annam.* II p. 461.
2331. **I. laxissimum** Cardot. *Formosa.* II p. 462.
2332. **I. bancanum** (Bryol. jav.) Jaeger. *Java, Banca.* II p. 462.
2333. **I. subalbidum** (Sullivant et Lesquereux) Mitten. *Formosa, Japan.* II p. 462.

Genus : **TAXIPHYLLUM.**

2334. **T. Giraldii** (C. Müller) Fleischer. *Formosa, E. China.* II p. 462.
2335. **T. Moutieri** (Brotherus et Paris) Brotherus. *Tonkin.* II p. 462.
2336. **T. Eberhardtii** (Brotherus et Paris) Brotherus. *Annam.* II p. 463.
2337. **T. planifrons** (Brotherus et Paris) Fleischer. *Laos, Formosa, Japan.* II p. 463.
2338. **T. punctulatum** Fleischer. *Java.* II p. 463.
2339.*†‡**T. faxirameum** (Mitten) Fleischer, Garhwal, Nepal, Sikkim, Bhotan, Abor, Assam, Khasia, Burma, S. India, Ceylon, *Tonkin, Sumatra, Philippines, Formosa, Japan.* II p. 463.
2340.* **T. Maniae** (Renauld et Paris) Fleischer. N. W. Himalaya, Nepal, *Java, Madagascar.* II p. 463.

Genus : **VESICULARIA.**

2341.‡ **V. Miquelii** (Bryol. jav.) Fleischer. Malacca, *Sumatra, Java, New Guinea, Borneo, Philippines.* II p. 464.
2342. **V. thermophila** Fleischer. *Java.* II p. 464.
2343.*†‡**V. reticulata** (Dozy et Molkenboer) Brotherus. Nepal, Sikkim, Khasia, S. India, Singapur, *Sumatra, Java, Celebes, Philippines.* II p. 464.
2344. **V. amboinensis** Brotherus. *Amboina.* II p. 464.
2345.‡ **V. Levieri** Cardot. Dharwar, Andamans. II p. 464.
2346.‡ **V. caloblasta** Brotherus et Dixon. Ceylon. II p. 464.
2347.*† **V. succosa** (Mitten) Brotherus. Nepal, Sikkim, Abor. II p. 464.
2347A. **V. marginata** Thériot. *Tonkin, China.* II p. 464.
2348.*† **V. Montagnei** (Bélanger) Brotherus. Himalaya, Abor, Tonkin. II p. 464.
2349. **V. tjibotense** Fleischer. *Java.* II p. 464.
2350. **V. chlorotica** (Bescherelle) Brotherus. *Tonkin.* II p. 464.
2351. **V. tonkinense** (Bescherelle) Brotherus. *Tonkin.* II p. 464.
2352. **V. rhynchostegiocarpa** (Brotherus et Paris) Brotherus. *Laos.* II p. 464.
2353. **V. subcaturiginosa** Fleischer. *Java, Timor.* II p. 465.
2354. **V. Kurzii** (Bryol. jav.) Brotherus. *Banca.* II p. 465.

2355. **V. Dubyana** (C. Müller) Brotherus. *Java, Banca, Amboina, Aru, Philippines.* II p. 465.

2356. **V. inflectens** (Bridel) C. Müller. *Borneo, Hongkong, Pacific Isles.* II p. 465.

2357.‡ **V. subpilipeuspis** Cardot et Varde. S. India.

2357A.‡ **V. nitidula** Cardot et Varde. S. India.

Genus : **DOLICHOTHECA.**

2358.* **D. silesiaca** (Seliger) Fleischer. Kashmir, *Japan, Europe, N. Am.* II p. 465.

Genus : **PLAGIOTHECIELLA.**

2359. **P. pilifera** (Swartz) Fleischer. *Siberia, Amur, Japan, Europe N. Am.*

Genus : **MICROCTENIDIUM.**

2360. **M. Leveilleanum** (Bryol. jav.) Fleischer. *Java.* II p. 467.

Genus : **CTENIDIADELPHUS.**

2361. **C. Plumaria** (C. Müller) Fleischer. *Java.* II p. 467.

2362. **C. spinulosus** (Brotherus) Fleischer. *Borneo.* II p. 467.

Genus : **CTENIDIUM.**

2363. **C. serratifolium** (Cardot) Brotherus. *Tonkin, Annam, Formosa.* II p. 467.

2364. **C. Forstenii** (Bryol. jav.) Brotherus. *Celebes, Philippines.* II p. 468.

2365.‡ **C. obscurirete** Brotherus. Ceylon. II p. 468.

2366.‡ **C. ceylanicum** Cardot. Ceylon. II p. 468.

2367.†‡ **C. lychnites** (Mitten) Brotherus. Khasia, Nilgiris, Palnis, Ceylon. II p. 468.

2368. **C. stellulatum** Mitten. *Formosa, Society Isles. Tohite.* II p. 468.

2369. **C. malacobolum** (C. Müller) Brotherus. *Sumatra, Java, Ciram, Ternate, Celebes, Borneo.* II p. 468.

2370. **C. scaberrimum** (Cardot) Brotherus. *Formosa.* II p. 468.

2371. **C. molluscum** (Hedwig) Mitten. *Caucasus, Kamtchatka, Europe, N. Afr.* II p. 468.

2372. **C. polychaetum** (Bryol. jav.) Brotherus. *Java.* II p. 469.

2373.‡ **C. falcifolium** Dixon. Malacca. II p. 469.

2374.‡ **C. stereodontoides** Dixon. Kanara. II p. 469.

Genus : **PTILIUM.**

2375.* **P. cristacastrensis** (Lin.) DeNotaris. Sikkim, *Yünnan, Caucasus, N. Asia, Sachalin, Japan, Europe, N. Am.* II p. 469.

Genus : **RHIZOHYPNELLA.**

2376. **RH. sundaensis** Fleischer. *Java.* II p. 470.

Family : **RHYTIDIACEAE.**

Genus : **PTYCHODIUM.**

2377. **P. plicatum** (Schleicher) Schimper. *Caucasus, Bear Island.* II. p. 478.

Genus : **RHYTIDIUM.**

2378. **PH. rugosum** (Ehrhardt) Kindberg. *Caucasus, N. and C. Asia, Japan, Europe, N. Afr., N. Am.* II p. 479.

Genus : **RHYTIDIADELPHUS.**

2379. **RH. yunnanensis** (Bescherelle) Brotherus. *Yünnan.* II p. 480.
2380.* **RH. triquetrus** (Lin.) Warnstorf. N. W. Himalaya, *Turkestan, Caucasus, N. and E. Asia, Sachalin, Japan, Europe, N. Am.* II p. 480.

Genus : **GOLLANIA.**

2381.* **G. clarescens** (Mitten) Brotherus Himalaya. II p. 481.
2382. **G. Elbertii,** Brotherus. Lombok. II p. 481.
2383.* **G. cylindrocarpa** (Mitten) Brotherus. Bhotan. II p. 482.
2384.* **G. ruginosa** (Mitten) Brotherus. Himalaya, *Japan.* II p. 482.

Family : **HYLOCOMIACEAE.**

Genus : **MACROTHAMNIELLA.**

2385.*†‡**M. pilosula** (Mitten) Fleischer. Sikkim, Bhotan, Assam, Khasia, S. India. II p. 483.

Genus : **LEPTOCLADIELLA.**

2386.* **L. psilura** (Mitten) Fleischer. Nepal, Sikkim. II p. 484.

Genus : **STENOTHECIOPSIS.**

2387. **S. serrula** (Mitten) Fleisher. Kumaon, Sikkim. II p. 484.

Genus : **LEPTOHYMENIUM.**

2388.* **L. tenue** (Hooker) Schwaegrichen. N. W. Himalaya, Nepal, Sikkim, Bhotan, Khasia, Burma. II p. 485.

2389. **L. hokinense** Bescherelle. *Yünnan.* II p. 485.

Genus : **MACROTHAMNIUM.**

2390.*†‡**M. macrocarpum** (Reinwardt et Hornschuch) Fleischer. Sikkim, Abor, Burma, S. India, Ceylon, *Indian Archipelago, Philippines.* II p. 486.

2391.*†‡**M. submacrocarpum** (Hampe) Fleischer. Himalaya, Garhwal, Khasia, Burma, S. India. II p. 486.

2392.*‡ **M. pseudostriatum** (C. Müller) Fleischer. India, Sikkim, Ceylon, *Sumatra.* II p. 486.

2393.* **M. stigmatophyllum** (Hampe) Fleischer. Sikkim. II p. 486.

2394. **M. javense** Fleischer. *Sumatra, Java, Celebes, Borneo, Philippines.* II p. 486.

Genus : **HYLOCOMIASTRUM.**

2395. **H. umbratum** (Ehrhardt) Fleischer. *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 487.

2396.* **H. himalayanum** (Mitten) Brotherus. Nepal, Sikkim, *Japan,* II. p. 487.

2397. **H. pyrenaicum** (Spruce) Fleischer. *Caucasus, Siberia, Japan, Europe, N. Am.* II p. 487.

Genus : **HYLOCOMIUM.**

2398.* **H. proliferum** (Lin.) Lindberg. Tibet, *Caucasus, Turkestan, Siberia, Japan, E. China, Spitzbergen, Europe, N. Afr., N. Am.* II p. 487.

Series Group : BUXBAUMIALES.

Series : BUXBAUMIALES.

Family : **BUXBAUMIACEAE.**

Genus : **BUXBAUMIA.**

2399. **B. indusiata** Bridel. *Caucasus, C. China, Europe, Brit. Columbia.* II p. 488.

2400. **B. javanica** C. Müller. *Java.* II p. 488.

Family : **DIPHYSCIACEAE.**

Genus : **DIPHYSCIUM.**

2401. **D. sessile** (Schmid) Lindberg. *Caucasus, Europe, N. Am.* II. p. 490.
2402.†‡ **D. involutum** (Mitten). Khasia, Ceylon. II p. 491.
2403. **D. mucronifolium** Mitten. *Borneo.* II p. 491.
2404.‡ **D. fasciculatum** Mitten. S. India, Ceylon. II p. 491.
2405. **D. rupestre** Mitten. *Java, Labuan, Borneo.* II p. 491.
2406.†‡ **D. longifolium** Griffith. Khasia, Ceylon, Tonkin. II p. 491.

Series Group : POLYTRICHINALES.

Series : POLYTRICHINALES.

Family : **POLYTRICHACEAE.**

Genus : **CATHARINAEA.**

2407. **C. Hausknechtii** (Juratzka et Milde) Brotherus. *Talysh, Caucasus, Siberia, Japan, Europe, N. Am.* II p. 494.
2408.* **C. obtusula** C. Müller. Himalaya, *C. China.* II p. 494.
2409.* **C. flaviseta** (Mitten) Brotherus. Simla, Kumaon, Nepal, Burma, *Japan.* II p. 494.
2410.* **C. undulata** (Lin.) Weber et Mohr. Kashmir, *Persia, Caucasus, Asia Minor, Cochinchina, China, Europe, N. Afr., N. Am.* II p. 494.
2411.*† **C. subserrata** (Hooker) Lindberg. N. W. Himalaya, Simla, Nepal, Sikkim, Khasia. II p. 494.
2412.‡ **C. aculeata** (Cardot et Varde) Brotherus. S. India. II p. 495.
2413. **C. Henryi** Salmon. *Yünnan.* II p. 495.
2414. **C. pallida** (Renauld et Cardot) Brotherus. Garhwal, Sikkim. II p. 495.
2415. **C. angustata** Bridel. *Caucasus, China, Europe,* N. Am. II p. 495.
2416. **C. Rutteri** Thériot et Dixon. *Borneo.* II p. 495.

Genus : **PSEUDORHACELOPUS.**

2416a. **Ps. Peteloti** Thériot et Henry. *Tonkin.*
2416b. **Ps. latifolius** Thériot et Henry. *Tonkin.*

Genus : **RHACELOPUS.**

2417.‡ **Rh. pilifer** Dozy et Molkenboer. Perak, *Tonkin, Java, Borneo, Batjan, Amboina, Moluccas, New Guinea, Philippines.* II p. 496.

Genus : **RHACELOPODOPSIS.**

2417a. **Rh. intermedia** Thériot et Henry. *Tonkin.*
2417b. **Rh. crassinervis** Thériot et Henry. *Tonkin.*

Genus : **OLIGOTRICHUM.**

2418. **O. semilamellatum** (Hooker) Mitten. Kumaon, Sikkim, Bhotan, Khasia, *Yünnan.* II p. 498.
2419. **O. javanicum** Bryol. jav. *Java.* II p. 498.

Genus : **PSILOPILUM.**

2420. **Ps. laevigatum** (Wahlenberg) Holz. *Arctic Siberia, Europe and America.* II p. 501.
2421. **Ps. cavifolium** (Wilson) Hagen. *Arctic Asia, Europe and America.* II p. 501.

Genus : **LYELLIA.**

2422.* **L. crispa** R. Brown. Nepal, Sikkim, Bhotan, Yünnan.
2422A. **L. platycarpa** Cardot et Thériot. Yünnan.

Genus : **POGONATUM.**

2423.*†‡**P. aloides** (Hedwig) Palisot. Himalaya : Nepal, Sikkim, Bhotan, Khasia, Simla, Garhwal, Nilgiris, Palnis, Ceylon, *Tonkin, Caucasus, Europe, N. and E. Africa.* II p. 506.
2424*†‡**P. hexagonum** Mitten. Nepal, Khasia, Nilgiris, Palnis, Ceylon. II p. 506.
2425.‡ **P. Nietneri** (C. Müller) Brotherus. Ceylon. II p. 506.
2426.‡ **P. Neesii** (C. Müller) Mitten. Nilgiris, Palnis, *Java.* II p. 506.
2427. **P. microphyllum** (Dozy et Molkenboer) Bryol. jav. *Java, Borneo.* II p. 506.
2428. **P. laokayense** Paris et Brotherus. *Tonkin.* II p. 506.
2429.* **P. leucopogon** Renauld et Cardot. Sikkim. II p. 506.
2430.* **P. Stevensii** Renauld et Cardot. N. W. Himalaya, Sikkim, Bhotan. II p. 507.
2431. **P. yunnanense** Bescherelle. *Yünnan.* II p. 507.
2432.‡ **P. influxum** Lindberg. S. India, *Formosa, Tonkin, China, Japan.* II p. 507.
2433. **P. Moutieri** Brotherus et Paris. *Tonkin.* II p. 507.

2434.*‡ **P. junghuhnianum** (Dozy et Molkenboer) *probably a form of P. Neesii.* Bryol. jav. Sikkim, Madura, *Java, Celebes, Tonkin, Philippines.* II p. 507.

2435.* **P. rufisetum** (Wilson) Mitten. Sikkim. II p. 507.

2436.* **P. papillosulum** Cardot et Dixon. Sikkim. II p. 507.

2437.†† **P. fuscatum** Mitten.. Himalaya, Khasia. II p. 507.

2438.‡ **P. Teysmannianum** (Dozy et Molkenboer) Bryol. jav. S. India: Palnis, Ceylon, *Sumatra, Java, Borneo.* II p. 507.

2439.* **P. nudiusculum** Mitten. Sikkim, Bhotan, *Philippines.* II p. 508.

2440. **P. atrichoides** Fleischer. *Java.* II p. 508.

2441. **P. arisanense** Okamura. *Formosa.* II p. 508.

2442.‡ **P. marginatum** Mitten. Ceylon. II p. 509.

2443*† **P. bornense** Thériot et Dixon. *Borneo.* II p. 509.

2444. **P. gymnophyllum** Mitten. Sikkim, Khasia, *Yünnan, Formosa.* II p. 509.

2445.*† **P. proliferum** (Griffith) Mitten. Sikkim, Khasia. II p. 509.

2446. **P. Warburgii** Brotherus. *Celebes, Philippines.* II. p. 509.

2447.*‡ **P. seminudum** (Wilson) Mitten. Sikkim, Ceylon. II p. 509.

2448.‡ **P. macrophyllum** Bryol. jav. Malacca, *Sumatra, Java, Moluccas, Philippines.* II p. 509.

2449.†‡ **P. flexicaule** Mitten. Assam, Malacca, *Annam.* II p. 509.

2450.‡ **P. cirratum** (Swartz) Bridel. Malacca, *Java, Borneo, Celebes, Amboina, China.* II p. 509.

2451. **P. lyellioides** Brotherus et Paris. *Tonkin.* II p. 509.

2452.*† **P. fastigiatum** Mitten. Sikkim, Khasia. II p. 509.

2453.*†‡**P. microstomum** (R. Brown) Bridel. Himalaya: Garhwal, Kumaon, Nepal, Sikkim, Khasia, Nilgiris, Palnis, Ceylon, *Tonkin, Yünnan, Setchwan, Philippines.* II p. 509.

2454. **P. clavatum** (Dozy et Molkenboer) Bryol. jav. *Java.* II p. 510.

2455.* **P. perichaetiale,** (Montagne) Jaeger. Himalaya: Simla, Garhwal, Nepal, Sikkim, Nilgiris, *Setchwan.* II p. 511.

2456.‡ **P. subperichaetiale** Cardot et Varde. S. India. II p. 511.

2457.* **P. Thomsonii** Mitten. N. W. Himalaya. II p. 511.

2458.* **P. tortipes** (Wilson) Jaeger. Sikkim, *China.* II p. 511.

2459. **P. urnigerum** (Lin) Palisot. *Persia, Caucasus, N. Asia, China, Europe, Canary Islands.* II p. 511.

2460.* **P. himalayanum** Mitten. Himalaya, *Japan.* II p. 511.

Genus: **POTLYTRICHUM.**

2461. **P. alpinum** Lin. *Caucasus, C. and N. Asia, Sachalin, Europe, N. and S. America, Antarctis, Australia, Tasmania, New Zealand.* II p. 512.

2462. **P. gracile** Dickson. *Caucasus, Talysh, Siberia, Japan, New Zealand, N. Am.* II p. 512.

2463.* **P. densifolium** Wilson. Sikkim. II p. 512.

2464.* **P. xanthopilum** Wilson. Sikkim. II p. 513.

2465. **P. attenuatum** Menzies. *Caucasus, Japan, Syria, Europe, N. Afr.*, N. Am. II p. 513.

2466. **P. commune** Lin. *Caucasus, N. Asia, Amur, Suchalin, Japan, Europe, Africa, N. and S. America, New Zealand, Australia.* II p. 513.

2467. **P. piliferum** Schreber. *Caucasus, N. Asia, Japan, Europe, Madeira, Canary Islands, N. and S. America, Comoras.* II p. 513.

2468.* **P. juniperinum** Willdenow. Kashmir, *C. and N. Asia, Caucasus, Japan, Europe, N. Afr., N. C. and S. Am., Austr.* II p. 515.

2469. **P. strictum** Banks. *N. Asia, Europe, N. Am., Patagonia, Fuegia, Antarctis.* II p. 515.

2469a. **P. tonkinense** Thériot et Henry. *Tonkin.*

Series : DAWSONIALES

Family : **DAWSONIACEAE.**

Genus : **DAWSONIA.**

2470 **D. altissima** Geheeb. *Borneo.* II p. 522.

2471. **D. brevifolia** Gepp. Borneo. II p. 522.

Genus et species inedita.

Trigonodyction indicum Dixon et Varde.

IV.—LIST OF SPECIES NOVAE INEDITAE CONTAINED IN E. LEVIER'S INDIAN EXSECIŒTA.

1. List of Species in E. Levier's Bryotheca exotica, lent. I., received at the British Museum in 1907, not referred to in Prof. Brotherus' account of the Mosses in the second edition of Engler and Prantl's "Pflanzenfamilien."

A.—Species from the N. W. Himalaya.

(1) **Acanthocladium** Gamblei Brotherus n. sp.
(2) **Amblystegium cyrtoclacum** C. Müller.
(3) **Anomodon glossophyllus** C. Müller.
(4) **Barbella pseudo-rutilans** C. Müller.
(5) **Barbula flagelligera** C. Müller.
(6) **Brachythecium brevipes** Brotherus.
(6A) **Brachythecium brevipes** Brotherus. =**Brachythecium kumaonense** Jaeger et Sauerbeck.
(7) **Bryum virenti-rete** C. Müller.
(8) **Catharinaea subobtusula** C. Müller.
(9) **Dicranella emodi-varia** C. Müller.
(10) **Dicranella viridissima** C. Müller.
(11) **Duthiella Emodi** C. Müller.
(12) **Entodon variegatus** Brotherus. =**Entodon flavescens** (Schwaegrichen) Jaeger et Sauerbeck.
(13) **Eurhynchium punctulatum** Brotherus.
(14) **Hymenostylium trichostomoides** Brotherus.
(15) **Hyophila subcrenata** C. Müller.
(16) **Hypnum perpinnatum** Brotherus.
(17) **Hypopterygium** Emodi C. Müller.
(18) **Isopterygium taxiramioides** (C. Müller).
(19) **Pinnatella Gollani** Brotherus.
(20) **Rhynchostegium cataractile** C. Müller.
(21) **Rhynchostegium Duthiei** C. Müller.
(22) **Rhynchostegium oedipyxis** C. Müller.
(23) **Rhynchostegium percomplanatum** C. Müller.
(24) **Thuidium thamnicladium** (C. Müller) Paris.
(25) **Trachypodopsis subcrispatula** (C. Müller) Fleischer.

B.—Species from S. India.

(26) **Bryum dolislum** Duby.
(27) **Calymperes linguatum** C. Müller.
(28) **Calymperes nigricans** Levier.

B.—Species from S. India—*contd.*

(29) **Ectropothecium pallido-nitens** (Carl Müller) Paris.
(30) **Hyophila suberosa** C. Müller.
(31) **Leucophanes nicobaricum** C. Müller.
(32) **Philonotis stolonacea** (C. Müller) Paris.

The following species mentioned in Levier's Bryotheca, Lent. I., are included in our main list under a different name (mostly *fide* Dixon):

Anaectangium tortifolium Wilson=*A. Strachcyanum* Mitten.
Brachythecium decurvans (Mitten)=*Bryhnia decurvans* Dixon.
Entodon Thomsoni Jaeger=*Entodon prorepens* Jaeger.
Hymenostylium aurantiacum Mitten=*H. curvirostre* Lindberg.
Meteoriopsis ancistrodes Brotherus=*M. reclinata* Mitten.
Palamocladium neilgheriense C. Müller=*Neuropus fenestratus* Griffith.
Pilopogon nigrescens Brotherus=*Thysanomitrium nigrescens* Brotherus
Pterobryopsis Foulkesiana (Mitten)=*Pt. orientalis* Fleischer.
The following corrections were published in Rev. Bryol. 1908.
Brachythecium brevipes Brotherus=*Br. kumaonense* Jaeger et Sb.
Entodon variegatus Brotherus=*E. flavescens* Jaeger et Sb.
Porotrichum Gollani Brotherus=*Pinnatella Gollani* Brotherus.

2. List of species in E. Levier's "Musci Indiae Orientalis" collected by W. Gollan, received at the British Museum in 1909, but not referred to in the second edition of Engler and Prantl's "Pflanzenfamilien."

(1) **Anoectangium aristatum,** Brotherus.
(2) **Anomodon glossophyllus** C. Müller.
(3) **Barbula dicranelloides** C. Müller.
(4) **Barbula flagelligera** C. Müller.
(5) **Barbula fuscifolia** C. Müller.
(6) **Barbula horricomis** C. Müller.
(7) **Barbula leucodontoides** C. Müller.
(8) **Barbula subgracilenta** C. Müller.
(9) **Barbula tenuiseta** C. Müller.
(10) **Brachythecium cirrhosulum** Brotherus.
(11) **Brachythecium pilicuspis** C. Müller.
(12) **Brachythecium pterogonoides** Brotherus.
(13) **Brachythecium subdumosum** C. Müller.
(14) **Bryum anomobryoides** Brotherus.
(15) **Bryum lamprostegium** C. Müller.
(16) **Bryum mohandicum** Brotherus.
(17) **Bryum mussuriense** Brotherus.
(18) **Bryum virentirete** C. Müller.
(19) **Campylium** Gollani C. Müller.
(20) **Campylopus albovaginatus** Brotherus.

(21) **Campylopus barbuloides** Brotherus.
(22) **Campylopus connivens** Brotherus.
(23) **Campylopus Raspannae** C. Müller.
(24) **Catharinaea subobtusula** C. Müller.
(25) **Cladopodium juliforme** Brotherus.
(26) **Cladopodium leucoloma** Brotherus.
(27) **Cladopodium subintegrifolium** Brotherus.
(28) **Clastobryum subplanulum** Brotherus.
(29) **Dicranella emodivaria** C. Müller.
(30) **Dicranella serrata** Brotherus.
(31) **Dicranella viridissima** C. Müller.
(32) **Didymodon molliculus** Brotherus.
(33) **Didymodon pertenellus** Brotherus.
(34) **Didymodon subtophaceus** Brotherus.
(35) **Didymodon viridis** Brotherus.
(36) **Ditrichum Duthiei** Brotherus.
(37) **Duthiella Emodi** C. Müller.
(38) **Ectropothecium lonchopteris** C. Müller.
(39) **Ectropothecium Martecii** Brotherus.
(40) **Encalyptfa aristatula** C. Müller.
(41) **Entodon brevissimus** C. Müller.
(42) **Entodon tenuiramens** C. Müller.
(43) **Epipterygium Falconeri** C. Müller.
(44) **Eurhynchium punctulatum** Brotherus.
(45) **Fissidens arnigadhensis** Brotherus.
(46) **Fissidens flaccidifolius** Brotherus.
(47) **Fissidens glaucifrons** C. Müller.
(48) **Fissidens Gollani** Brotherus.
(49) **Fissidens himalayanus** Brotherus.
(50) **Fissidens leptocormus** C. Müller.
(51) **Fissidens mussuriensis** C. Müller.
(52) **Fissidens perangustus** Brotherus.
(53) **Fissidens Schmidii** C. Müller.
(54) **Fissidens subgrandifrons.** C. Müller.
(55) **Funaria** (*Plagiopus*) **Gollani** Brotherus.
(56) **Funaria** (*Entosthodon*) **mussuriensis** Brotherus.
(57) **Grimmia pulvericola** C. Müller.
(58) **Hygroamblystegium cyrtocladum** (C. Müller) Brotherus.
(59) **Hymenostylium trichostomoides** Brotherus.
(60) **Hymenostylium vernicosum** C. Müller.
(61) **Hyophila flaccida** Brotherus.
(62) **Hyophila integerrima** C. Müller.
(63) **Hyophila Kabir-Khanii** Brotherus
(64) **Hyophila subcrenata** C. Müller.

(65) **Hypopterygium Emodi** C. Müller.
(66) **Isopterygium taxirameoides** (C. Müller) Brotherus.
(67) **Molendoa corticola** Brotherus.
(68) **Penzigiella subcordata** Brotherus.
(69) **Philonotis Mathildis** C. Müller.
(70) **Philonotis pergracilis** Brotherus.
(71) **Physcomitrium saharanpurense** C. Müller.
(72) **Pinnatella Gollani** Brotherus.
(73) **Plagiothecium massuriense** Brotherus.
(74) **Platygyrium Gollani** Brotherus.
(75) **Pleuridium massuriense** Brotherus.
(76) **Pseudoleskea fuscifolia** C. Müller.
(77) **Pseudoleskea pterogonioides** Brotherus.
(78) **Pseudoleskea vagans** C. Müller.
(79) **Rhacomitrium subheterostichum** C. Müller.
(80) **Rhynchostegium cataractile** C. Müller.
(81) **Rhynchostegium Duthiei** C. Müller.
(82) **Rhynchostegium massuriense** Brotherus.
(83) **Rhynchostagium oedipyois** C. Müller.
(84) **Rhynchostegium percomplanatum** C. Müller.
(85) **Oxyrrhynchium sciuroides** Brotherus.
(86) **Hypnum** (*Stereodon*) **flavicolor** (Brotherus).
(87) **Hypnum** (*Stereodon*) **Gollani** (Brotherus).
(88) **Hypnum** (*Stereodon*) **Kidarkantae** (Brotherus).
(89) **Hypnum** (*Stereodon*) **lescuraeoides** (Brotherus).
(90) **Hypnum** (*Stereodon*) **perpinnatum** (Brotherus).
(91) **Hypnum** (*Stereodon*) **perichaetiale** (Brotherus).
(92) **Hypnum** (*Stereodon*) **punctulatum** (Brotherus).
(93) **Hypnum** (*Stereodon*) **robustulum** (Brotherus).
(94) **Hypnum** (*Stereodon*) **viridicolor** (C. Müller) (Brotherus).
(95) **Stereophyllum emodicolum** (C. Müller) Paris.
(96) **Stereophyllum Gollani** Brotherus.
(97) **Stereophyllum mohandicum** (C. Müller) Paris.
(98) **Struckia pallescens** C. Müller.
(99) **Symblepharis microtheca** C. Müller.
(100) **Thuidium complanatulum** Brotherus.
(101) **Thuidium haplohymenoides** C. Müller.
(102) **Thuidium thamnocladum** (C. Müller) Paris.
(103) **Tortula** (*Syntrichia*) **massuriensis** Brotherus.
(104) **Trachypodopsis suberispula** (C. Müller) Fleischer.
(105) **Trachypus suberispatulus** C. Müller.
(106) **Trematodon capillifolius** C. Müller.
(107) **Trichosteleum macrostichum** Brotherus.
(108) **Webera paupera** (C. Müller) Paris.

The following species mentioned in E. Levier's "Musci Indiae Orientalis, curante W. Gollan lecti" are referred to in the main list under a different name :—

Bartramia Halleriana Hedwig=*Bartramia noroegica* Lindberg.
Bryum erythrinum Mitten=*Bryum porphyroneuron* C. Müller, *var.*
Bryum neilgheriense (Montagne)=*Bryum ramosum* Mitten.
Cirriphyllum decurvans (Mitten)=*Bryhnia decurvans* Dixon.
Cyathophorum Adiantum Mitten=*Cyathophorella Hdiantum* Fleischer.
Cyathophorum intermedium Mitten=*Cyathophorella intermedia* Brotherus.
Dicranella Griffithii (Mitten)=*Campylopodium Griffithii* Mitten.
Homalia glossophylla Jaeger=*Homaliodendron microdendron* Fleischer.
Leskea pterogonioides Brotherus=*Rozea pterogonioides* Jaeger.
Neckera exserta Hooker=*Neckeropsis exserta* Brotherus.
Pilopogon nigrescens Brotherus=*Thysanometrium nigrescens* Brotherus.
Pterobryopsis Foulkesiana (Mitten)=*Pterobryopsis orientalis* Fleischer.
Rhynchostegium humillimum Jaeger=*Rhynchostegiella humillima* Brotherus.
Rhynchostegium rusciforme (Weiss)=*Ratyhypnidium rusciforme* Fleischer.
Scopelophila Duthiei C. Müller=*Mercayopsis sp. (e).*
Scopelophila latifolia Brotherus=*Merceya latifolia* Kindberg (?).
Scopelophila minuta Brotherus=*Merceyopsis minuta* Brotherus et Dixon.
Stereodon emodi-fertile Brotherus=*Hypnum emodi-fertile* Brotherus.

3. List of species in E. Levier's Sikkim Collection, received at the British Museum in 1908, but not referred to in the second edition of Engler and Prantl's "Pflanzenfamilien."

(1) **Acanthocladium Decolyi** Brotherus.
(2) **Acanthocladium Hartlessii** Brotherus.
(3) **Acanthocladium sciuroides** Brotherus.
(4) **Barbella pseudorutilans** (C. Müller) Brotherus.
(5) **Barbula Decolyi** Brotherus.
(6) **Barbula dicranelloides** C. Müller.
(7) **Bryum perdecurrens** Brotherus.
(8) **Calymperes sikkimense** Brotherus.
(9) **Calyptothecium sikkimense** Brotherus.
(10) **Chaetomitrium sikkimense** Brotherus.
(11) **Daltonia Decolyi** Brotherus.
(12) **Daltonia leptophylla** Brotherus.
(13) **Dicranoolontium macrozlare** Brotherus.
(14) **Distichophyllum Levieri** Brotherus.
(15) **Ectropothecium Decolyi** Brotherus.

(16) **Ectropothecium papillosum** Brotherus.
(17) **Ectropothecium pendulum** Brotherus.
(18) **Entodon Gollani** Brotherus.
(19) **Entodon sciuroides** Brotherus.
(20) **Eurhynchium Hartlessii** Brotherus.
(21) **Fissidens laxitextus** Brotherus.
(22) **Fissidens leptocormus** C. Müller.
(23) **Fissidens pergracilis** Brotherus.
(24) **Fissidens rigidinsculus** Brotherus.
(25) **Garovaglia pungentella** Brotherus.
(26) **Garovaglia subpungentella** Brotherus.
(27) **Homalia rhynchostegioides** Brotherus.
probably a species of Homaliodendron.
(28) **Hyophila microcarpa** Brotherus.
(29) **Hyophila subcylindrica** Brotherus.
(30) **Leptohymenium hamatum** Brotherus.
(31) **Leucomium Decolyi** Brotherus.
(32) **Meteoriopsis sordida** Brotherus.
(33) **Meteorium monostictum** Brotherus.
(34) **Microthamnium molliculum** Brotherus.
(35) **Mnium pseudocrispum** C. Müller.
(36) **Neckera levifolia** Brotherus.
(37) **Papillaria pinniramea** C. Müller.
(38) **Papillaria subsemitorta** C. Müller.
(39) **Philonotis pergracilis** Brotherus.
(40) **Philonotis subheterophylla** Brotherus.
(41) **Plagiothecium Entodontella** Brotherus.
(42) **Plagiothecium oblongifolium** Brotherus.
(43) **Plagiothecium serrulatum** Brotherus.
(44) **Pogonatum Decolyi** Brotherus.
(45) **Pogonatum strictifolium** Brotherus.
(46) **Pterobryopsis Levieri** Brotherus.
(47) **Pylaisia Gollani** Brotherus.
(48) **Rhaphidostegium calochlorum** Brotherus.
(49) **Rhaphidostegium laxitextum**, Renauld et Cardot.
(50) **Rhynchostegium Decolyi** Brotherus.
(51) **Rhynchostegium flaccum** Brotherus.
(52) **Rhynchostegium ramicola** Brotherus.
(53) **Scopelophila** (*Merceyopsis*) **Duthiei** C. Müller.
(54) **Stereodon lepidus** Mitten.
(55) **Stereodon micans** Mitten.
(56) **Stereodon pilotrichelloides** Brotherus.
(57) **Stereodon propingnus** (Harvey) Mitten.
(58) **Stereodon pylaisiaceus** C. Müller.

(59) **Thuidium carinatum** Brotherus.
(60) **Tortula abruptinervis** Brotherus.
(61) **Tortula microphylligera** Brotherus.
(62) **Trachypus Decolyi** Brotherus.
(63) **Trachypus subbicolor** C. Müller.
(64) **Trematodon Kurzii** Hampe.
(65) **Trachysteleum armatum** Brotherus.
(66) **Trachysteleum Gammieanum** Brotherus.
(67) **Trachysteleum stereodontoides** Brotherus.

The following species referred to in E. Levier's list of Sjkkim Mosses are enumerated in our main list under different names:

Anoectangium tortifolium Wilson=*Anoectangium Strachayanum* Mitten.

Brachythecium pseudoplumosum Brockmann=*Brachythecium plumosum* Bryol. end.

Bryum neilgherriense Montagne=*Mnium rostratum* Schrader.

Clastobryum planulum (Mitten)=*Aptychella planula* Fleischer.

Dicranella Griffithii Mitten=*Campylopodium Griffithii* Mitten.

Dicranella pomiformis Jaeger=*Microdus brasiliensis* Thériot.

Ectropothecium reticulatum Jaeger et Sauerbeck=*Vesicularia reticulata* Brotherus.

Floribundaria Levieri Brotherus=*Barbella Levieri* Fleischer.

Floribundaria tumidoaurea Brotherus=*Chrysocladium tumidoaureum* Fleischer.

Homalia montagneana C. Müller=*Homaliodendron Montagneanum* Fleischer.

Homalia Paquei Renauldet Cardot=*Homaliodendron Paquei* Brotherus.

Isopterygium surculare Mitten = *Acanthocladium surculare* Brotherus.

Neckera acutala Mitten=*Neckeropsis acutata* Fleischer.

Pterobryopsis Foulkesiana Mitten=*Pterobryopsis orientalis* Fleischer.

Rharomitrium subsecundum Jaeger=*Rhacomitrium javanicum* Bryol. jav.

Rhaphidostegium curvirostre Jaeger et Sauerbeck=*Brotherella curvirostris* Fleischer.

Scopelophila hyophiloides Brotherus=*Merceyopsis sikkimensis* Brotherus et Dixon.

Scopelophila sikkimensis C. Müller=*Merceyopsis sikkimensis* Brotherus et Dixon.

Stereodon pilosulus Mitten=*Macrothamniella pilosula* Fleischer.

4. List of species in E. Levier's Bhotan collection of mosses, received at the British Museum in 1907, but not referred to in the second edition of Engler and Prantl's "Pflanzenfamilien."

Acanthocladium entodontoides Brotherus.

Barbula dicranelloides C. Müller.

Campylopus Durelii Brotherus.
Ectropothecium mussuriense (C. Müller) Paris.
Mnium submacrocarpum (Hampe) Fleischer.
Philonotis laxifolia Brotherus.
Physcomitrium perflaccidum Brotherus.
Physcomitrium subsphaericum Brotherus.
Pinnatella Kurziana (Hampe) Fleischer.
Pterobdon amblyostegus Mitten.
Trichosteleum stereodontoides Brotherus.
Dicranella pomiformis (Griffith)=*Microdus brasiliensis* Thériot.
Rhaphidostagium curvirostre (Schwaegrichen)=*Brotherella curvirostris* Fleischer.

5. List of species in E. Levier's Tenasserim collection, received at the British Museum in 1907, but not referred to in the second edition of Engler and Prantl's "Pflanzenfamilien."

(1) **Aerobryopsis birmensis** Brotherus.
(2) **Anoectangium birmense** C. Müller.
(3) **Barbula platyphylla** Brotherus.
(4) **Barbula subconsanguinea** Brotherus.
(5) **Dicranodontium birmense** Brotherus.
(6) **Ectropothecium leptodictyon** Brotherus.
(7) **Ectropothecium vernicosum** Brotherus.
(8) **Fissidens subglaucifrons** E. Levier.
(9) **Hyophila pygmaea** C. Müller.
(10) **Isopterygium taxiramoides** (C. Müller).
(11) **Isopterygium trichocaule** (C. Müller) Paris.
(12) **Leucoloma birmense** C. Müller.
(13) **Pogonatum catharinelloides** C. Müller.
(14) **Pogonatum Feae** C. Müller.
(15) **Pterobryopsis meteorioides** (Brotherus).
(16) **Rhegmatodon Feanus** C. Müller.
(17) **Sphagnum Feae** C. Müller.
(18) **Splachnobryum byssoides** C. Müller.
(19) **Splachnobryum vernicosum** Brotherus.
(20) **Thuidium striinerve** (C. Müller) Paris.
(21) **Trachypodopsis Feae** (C. Müller) Fleischer.
(22) **Trachypodopsis grossiserrata** (C. Müller).
(23) **Trichostomum birmense** Brotherus.

Bryum ambiguum Duby=*Bryum plumosum* Dozy et Molkenboer.
Cyathophorum Kurzeanum=*Cyathophorella Adiantum* Fleischer.
Ectropothecium reticulatum Jaeger et Sauerbeck=*Vesicularia reticulata* Brotherus.
Homalia glossophylla Jaeger et Sauerbeck=*Homaliodondron glossophyllum*=Homaliodendron microdendron (Montagne) Fleischer.

Stenothecium tenue (Schwaegrichen)=*Leptohymenium tenue* Schwaegrichen.

Stenothecium retusifolium and *Stenothecium crenulalifolium* may be varieties of *Leptohymenium tenue.*

Thuidium cygnisetum Hampe, may be identical with *Thuidium tamariscellum* (C. Müller).

V.—ON THE COLLECTION AND PRESERVATION OF MOSSES.

Success in securing a collection of real value depends very largely on the collector being able to settle down in a chosen locality for at least one or two weeks and to make comparatively short excursions in various directions from that locality as a centre, concentrating his attention on the most promising places. Anyone who has the opportunity of staying in the "Hills" for a whole season or at least for a month or two, say in the Himalayas, Khasias, or Nilgiris, not to mention other promising places, and who makes it his business to explore the surrounding country methodically and thoroughly will gather a more plentiful and a scientifically more valuable harvest than one who spends his time in long-distance marches and in what I have called elsewhere "botanical raids". A longer stay at a given place or repeated visits to it at definite intervals are necessary to enable the collector not only to gather moss specimens with capsule and calyptra complete, but also, what is as important, to collect specimens with "flowers" with archegonia or antheridia or both. Correct determination of species presupposes the possession of precise knowledge of the distribution of the sexual organs, that is to say a knowledge of whether the moss is dicœcious, monœcious, parœcious, synœcious or polygamous. Archegonia and antheridia are best looked for during the earlier parts of the "Rains", say in June, July and August, whilst specimens with capsules make their appearance during the later part of July and are found till the earlier part of October. This statement applies particularly to the Himalayan region, the Assam Hill Ranges, and to the Indo-Gangetic plain.

Great care has to be taken not to mix up different species and particularly not to lose the lid and the calyptra. To secure this end the gathered moss specimens must be wrapped separately in good stout paper, and it is advisable to place samples of the whole plant together with a number of intact capsules with seta, lid and calyptra in separate envelopes, noting on the latter date and place of collection and various other details of interest. A good pocket lens having a wide field of view and magnifying, say, ten times is an absolute necessity. The substratum on which the moss grows, whether sandy, loamy or calcareous, whether soil or rock or the stems or branches of trees, whether in bogs or on the banks of water courses or the edges of cascades, whether sandstones, limestones, gneisses, shales or slates, whether walls or the roofs of buildings, whether in shady or sunny places or in forest clearings should be carefully noted, and the habit of the moss and its association should be paid attention to.

The gathered specimens must be cleaned from dust, dirt, adhering debris as much as possible, but care must be taken not to injure the underground parts of the moss. Generally they will have to be gathered together with a portion of the substratum whether soil or the bark of trees. Rock mosses should not be torn off from their substratum, but a slice of the latter should be cut off with the aid of hammer and chisel. The adhering soil should ultimately be impregnated with glue and allowed to dry. After reaching "home" thicker portions of the turf should be cut up into slices.

The best paper for drying specimens in is the paper used by printers for "pulling proofs"; this description of paper is smooth and sufficiently absorbent. The double sheet of paper in which the specimen is directly placed is not to be changed, but it is to be separated from other specimens by packets of the same kind of paper, each packet consisting of at least three double sheets placed one within the other. These packets have to be changed for fresh ones at least once a day until the specimens are completely dry. The whole heap of bundles is only gently pressed; placing it on a board of convenient size and covering it with a similar board, say, one inch thick is often quite sufficient, or the bundles may be placed between two wire frames and tightly tied up.

A suitable capsule for containing the moss specimen is best made as recommended by Limpricht: cut a piece of strong writing paper to the size required to contain the specimen, the shape rectangular, ratio of sides about 4 : 3. Fold the paper parallel to the narrower side, the fold to be made about half an inch below the middle of the longer side. Next fold the upper longer portion over the shorter lower one and then fold the two marginal portions of a breadth of about half an inch on either side sharply backwards. The capsule with the specimen inside may be fixed by two dabs of glue poisoned with copper sulphate placed along the vertical middle line on the back of the capsule. Separate capsules, fallen off lids and calyptras are placed in smaller capsules on the same sheet of stout mounting paper.

VI.—NOTE ON THE EXAMINATION AND DETERMINATION OF MOSSES.

Useful information will already have been gathered at the time of collecting the specimens and should have been carefully recorded. The points which should be particularly noticed in the field are (*a*) the substratum on which the moss grows— ground—, wall—, rock— mosses, mosses growing on the roots, trunks, bark, branches, twigs or even the leaves of trees; in the case of ground-mosses the nature of the soil— siliceous, calcareous or soil rich in organic matter (sandy, clayey, marly, purely calcareous, muddy, humous, on decaying wood or bark, on the droppings of cattle and other animals); in the case of hydrophilous mosses whether growing in ponds, jhils or lakes, in ditches, in rapidly or slowly flowing water, near waterfalls or at the edge of rivers or rivulets, in peat-bogs or on sacking meadows); in the case of mesophytic and xerophytic mosses whether on fields, meadows, road-sides, in open or dense forests, in pine—, oak—or other forests, on stony declivities or vertical rock-faces, etc.; (*b*) climatic conditions—hygrometric and thermometric; (*c*) the mode of association of the individual moss plants— single among other mosses, gregarious, in tufts, forming cushions or coatings, in tiers, interwoven, etc.; (*d*) the colour of the plant-mass and the individual plants (various shades of green from greenish-white to blackish green, shades of brown, yellow or red, variously variegated); (*e*) the degree of lustre (shining to dull); (*f*) the feel (soft, velvety, harsh, prickly); (*g*) the habit (erect, ascending, prostrate, creeping, pendent); (*h*) physiographical features and altitude.

For making observations in the field a folding pocket Steinheil or similar high-class lens in metal casing giving a wide and plane field of view and magnifying about ten times is most serviceable. For the actual determinative work at home or in the laboratory a dissecting and a compound microscope are absolutely necessary. The dissecting microscope may be of any of the types manufactured by any reputable optical firm of manufacturer. The lenses should magnify about 10 and 20 times, and the stand should be stable and be provided with rack and pinion motion. For byological and other botanical work I have found a Pfeiffer image-erecting dissecting microscope of great service; it is really a compound microscope with erecting Porro prisms and three objectives the highest of which permits a magnification of nearly 100 with a free working distance of 7 mm; with the addition of two Steinheil magnifying lenses of 10 and 20 magnifications it can be made to serve as a simple dissecting microscope.

The compound microscope should have an inclinable upper part, a graduated draw-tube, a substage with rack and pinion movement, and a condenser with iris diaphragm, further a triple nose-piece, three

dry objectives and either Huygenian or periplanatic eye-pieces. Personally I prefer objectives 3*a*, 6*a* and 7*a* of Leitz in combination with either Huygenian eye-pieces I and III or periplanatic eye-pieces 6× and 10†×. This gives a large series of magnifications from 68× to 580×. Other combinations may, of course, be used.

A camera lucida is indispensable; an echelon micrometer eye-piece will be found most useful and expeditious for determining the dimensions of cells and spores. Drawing to scale by the aid of the camera lucida and prompt measurements by the eye-piece micrometer should be assiduously practised. A "large" travelling microscope with the appropriate sets of objectives and eye-pieces may be substituted for the more ordinary type of microscope and will be found most useful when out on expeditions.

When preparing for the examination of herbarium specimens a good plan is to dip a suitably smaller portion of the plant-mass for quite a short time in hot water, then to spread out the specimen on a glass plate and isolate single individuals, taking great care to ensure that no injury is done to the basal part with its rhizoids and any hypophylls or paraphyllia which may be present. The moss plant is then placed on a slide, its branching and other characters as well as the behaviour of the leaves as the water evaporates and the plant becomes completely dry are carefully noted. Plants isolated from the original herbarium specimen may also be moistened with water at the ordinary temperature and the behaviour of the leaves observed; hygroscopic leaves, such as those of species of Grimmia will be seen to execute characteristic movements.

A plant with its leaves intact is next placed between the two surfaces of a rod of pith cut into two halves longitudinally and a series of sections made yielding a large number of transverse sections of stem and leaves. It is necessary to have sections of the stem at different levels as well as cross-sections through leaf-blade and midrib at different parts from base to apex. It is very important to note whether the midrib, where present, is homogeneous or heterogeneous in structure, whether stereid bands and deuter and companion cells (eurycysts and stenocysts) are present or absent, whether the leaf-cells form only a single layer or several layers and whether in this respect the basal, median, apical and marginal regions are similar or dissimilar. The external and internal morphological characters of the seta have to be noted and special attention has to be paid to the capsule, its neck when present, the urn, the presence or absence of stomata, the nature of the peristome, of lid and beak, the spore-sac, the spores, the presence or absence of suspension filaments in the air-space and the character and dimensions of the spores. Longitudinal sections of the capsule are conveniently made by a knife with double blades, although the razor may

be quite sufficient for the purpose. For all other sectional work a razor with plane-concave blade is the most suitable. To establish the presence or absence of papilla on the leaf-cells it is advisable to destroy the cell-contents by placing the leaf in a drop of a solution of chloral hydrate; the presence or absence of mamillae in contradistinction of papillæ is best ascertained in cross-sections. To demonstrate the presence of stomata the capsule is best divided into two halves by a longitudinal section; the two halves are spread out on a slide and treated with some decolorising reagent. I have found the liquid called chlorogen and now largely sold as a disinfectant very useful as a decolorising reagent. After decoloration has been effected the preparation is washed with water, placed in a drop of water, covered with a cover glass and examined under the microscope.

After all the points referred to have been carefully noted, drawings made and dimensions taken, the worker will be ready to turn to the "keys" for the purpose of identification of the genus to which the specimen belongs. In this way guess work and jumping to conclusions will be entirely avoided.

We here in India are yet a long way off from being able to elaborate a key to the species; but a careful use of Prof. Brotherus' account of the Mosses in Engler and Prantl's "Pflanzenfamilien" and the other literature referred to in the Introduction will frequently enable the student to spot the species or at least to ascertain the group to which it belongs. Anyone who wishes to appeal to European Bryologists for the identification of specimens he has collected should take the trouble of sending, together with the specimen, carefully executed drawings, especially of the dissections, and clear descriptions. That will not be impossible if he has tried his best to identify the genus by the aid of the two analytical keys provided in the present volume. He may then be sure to receive a reply within a reasonably short period of time. One must not expect other people whose time is valuable to do the work which one ought to do one's self. The specimens should be carefully numbered and the sender should keep numbered duplicates. The specimens sent should not be expected to be returned. Care should be taken that the specimens are as complete as possible; they should be accompanied by notes on the subjects referred to at the beginning of the present section.

ADDENDA TO PART NO. 1 OF VOL. XIII.

On page 65, after the genus Cleistostoma should find its place.

RHACOCARPUS.

1287A, Rh. alpinus (Wright) Paris. Borneo.

On page 79, after the Nemataceæ should stand

Family : **PILOTRICHACEÆ.**

Genus : **PILOTRICHUM.**

This Genus appears to be confined to Tropical America.

MGIPC—M—III-7-4—8-1-31—400

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WITH

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BY

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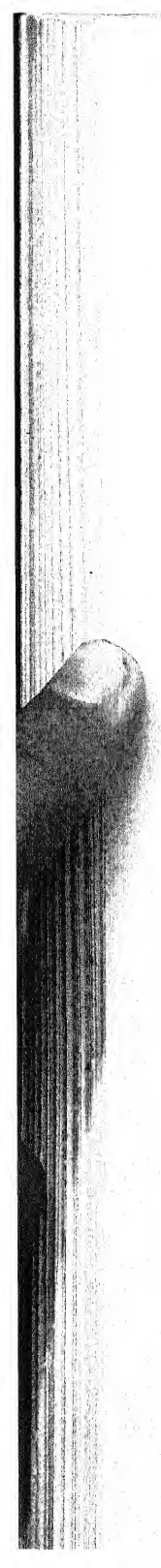
PRELIMINARY NOTE.

The analytical key is based as much as this was found possible on vegetative characters. This holds good particularly as far as the main alternatives are concerned. The chief characteristics of the sporophyte are noted, but are not, as a rule, made use of as alternatives. The only purpose which the key is meant to serve is the ready determination of the genus to which a given specimen belongs without any regard to the systematic position of the genus concerned. To facilitate systematic studies the page on which the genus concerned is characterized in the second edition of Engler and Prantl's "Pflanzenfamilien" is given in round brackets prefixed to the name of the genus; numbers without a dash refer to the first volume (10. Band; Erste Hälfte), the numbers with a dash refer to the page in the second volume (11. Band; Zweite Hälfte). The page number after the name of the genus is that on which the genus is referred to in the Census of Species in the present volume No. 1. In the case of monotypic genera as well as frequently also in the case of genera represented only by a single species in the "Indian" area the specific name is usually added. A double asterisk indicates that the genus concerned has been reported from the Indian Empire, Ceylon and the Malay Peninsula. The habitat and the distribution in general of each genus are indicated in the key; further details as regards distribution are found in the Census of Species.

SCHEME OF THE ANALYTICAL KEY.



ANALYTICAL KEY TO THE GENERA REFERRED TO IN THE CENSUS OF SPECIES.

1. Stems rising from a persistent, well developed, partly or entirely subaërial protonema rich in chlorophyll . . 2

— Protonema mostly fugacious, or if ± persistent, then either subterranean or in the shape of ribbon-like, foliaceous, dendroid or peltate cellular bodies 4

2. Leaves entirely absent except a few forming a perichaetium, otherwise replaced by dichotomously branched assimilating organs arising from the protonema ; the protonema forming a coating on the surface of leaves of phanerogams and ferns ; capsule suberect, prolate-spheroidal ; peristome double ; lid hemisphaerical, beak oblique ; calyptra conically cap-shaped, margin with long cilia ; tropical tree-moss,

(216′) **Ephemeropsis**** p. 79.

Leaves present 3

3. Leaves green, the upper ones lanceolate or linear ; capsule ± spherical, subsessile lid not differentiated ; spores comparatively large, up to 80 μ in dia. ; forming a coating on clayey soil in temperate and tropical regions.

(317) **Ephemerum.** p. 45.

— Leaves colourless except at their base, ovate or ovate-lanceolate ; midrib absent ; capsule dorsi-ventral ; seta elongate, rather stout, red, minutely and densely warty ; spores numerous, 12 μ and less in dia ; male plants microscopically small ; on soil or rotting wood in temperate and tropical regions.

(488′) **Buxbaumia.** p. 116.

4. The filiform protonema producing peltate or foliaceous cell-bodies ; midrib long 5

— Protonema ± fugacious, not giving rise to peltate or foliaceous cell-bodies 6

5. Cell-bodies peltate ; plants 5-10 mm. in height ; lower leaves lingulate, elongate-spatulate or lorate, the upper and

perichaetial leaves much larger, ovate-lanceolate and linear, mostly fringed at the tip and awned; seta very short; capsule obliquely ovoid-conical, the basal dorsal part ventricose; peristome double; lid small, conical; calyptra small, conical; ground- and rock-mosses of temperate and tropical regions.

(489') **Diphyscium**** p. 117.

— Cell-bodies foliaceous, producing buds at their base; stem slender; leaves in 3 to 5 rows, below hypophyllous, upwards ovate-lanceolate; seta 10-15 mm. long; capsule cylindric; peristome-teeth 4, trigonal-pyramidal, apparently consisting of longitudinal fibres; lid conical, split open on one side calyptra conical, longitudinally plicate, margin laciniate; on moist ground, decaying tree-trunks and roots, on peaty ground and wet rock-faces in temperate regions.

(346) **Georgia.** p. 47.

6. Dorsal surface of leaves with a wing-like expansion (dorsal wing); leaves distichous, cymbiform; leaf-cells nearly uniform, roundish-hexagonal or elongate-rhombic; marginal cells often forming a seam; seta mostly elongate; capsule erect or inclined, spheroidal, ellipsoidal or ovoid-cylindrical; lid conical, beak usually long; calyptra conical, entire or slit open at one side; ground-rock- and tree-mosses, also on decaying tree-trunks or aquatic, cosmopolitan.

(144) **Fissidens**** p. 16.

— Leaves without a dorsal wing 7

7. Leaves bearing on their ventral surface, at least along part of the midrib, longitudinal lamellae, *or* the peristome-teeth made up of fibres, often doubled back at the tip of the teeth in the form of an inverted U, *or* both characters present, *or* the broad midrib supporting a ventral cushion consisting of dichotomously branched cellular filaments 8

— Leaves ventrally supporting neither lamellae nor a cushion of filaments, nor the peristome-teeth, where present, built up of fibres 18

8. Peristome-teeth lingulate or absent 9

— Peristome-teeth *either* setaceous or subfiliform and ± twisted, *or* narrow-linear and of irregular outline, irregularly bifid or fenestrate and straight . 16

9. Lamellae absent; seta papillose; capsule without stomata; peristome-teeth 32 10

— Lamellae present; capsule without or with stomata . . 11

10. Upper leaves oblong or oblong-lingulate; midrib valid, ending close to the leaf-tip; gametophyte up to 1 cm. in height; basal part of leaves short, hyaline; seta up to 2 cm. in length, papillose; capsule erect to slightly inclined, prolate-spheroidal or oblong-obovoid; lid cupola-shaped, crowned by a wart; calyptra enveloping the whole of the capsule; Tonkinese and Japanese ground-mosses.

(495′) **Pseudorhacelopus.** p. 117.

— Leaves upwards narrow-subulate, basal part stem-clasping; midrib narrow and thin, extending into the subulate point; leaf-cells transparent; gametophyte very short 10*a*

10*a*. Midrib homogeneous, consisting of two layers of cells with a wide-lumen; margin of the subulate point irregularly serrate; urn smooth; Tonkinese and Japanese ground-mosses.

(496′) **Rhacelopodopsis.** p. 118.

— Midrib heterogeneous; margin of leaves quite entire; epidermal cells of the urn mamillarly protruding; lid shallow-conical, shortly pointed; ground- and rock-mosses, also on decaying wood in tropical regions.

(495′) **Rhacelopus pilifer**** p. 118.

11. Axial column indistinctly delimited, not polytrichoid; lamellae wavy, their margin crenulate 12

— Axial column clearly delimited, mostly polytrichoid . . 13

12. Midrib dorsally upwards pectinately dentate; capsule erect or inclined, terete, straight, cylindric; calyptra elongate-conical, split open on one side, sparsely or densely hairy; ground-mosses of temperate and tropical regions.

(497′) **Oligotrichum.**** p 118.

— Midrib dorsally smooth; capsule inclined, very rarely erect and subspherical, mostly laterally compressed, sometimes

strongly curved; calyptra hood-shaped, nearly always glabrous; ground-mosses of temperate and arctic regions.

(499′) **Psilopilum.** p. 118.

13. Lamellae 2, 4 or 6; leaf-blade consisting of one layer of cells 13*a*

— Lamellae numerous, up to 64, rarely as few as 5, leaf-blade mostly of two layers of cells 14

13*a*. Stem simple, with basal rhizoids; leaves cochleariform, adpressed, mostly obovate, pointed; midrib produced as a hair-point; leaf-cells roundish—4—6-sided, at the leaf-tip rhombic, at the leaf-base rectangular and hyaline; capsule immersed or exserted, subspherical; peristome wanting; lid cupola-shaped, beak short; calyptra cap-shaped, margin 3—5-lobed; ground-mosses of temperate and warmer regions.

(292) **Pterygoneurum.** p. 41.

— Underground part of the stem creeping, much branched, rope-like twisted, emitting numerous ascending or erect shoots, at their base covered with a felt of rhizoids; leaves flat or keeled, mostly with a marginal rim, linguiate to linear-lanceolate, serrate; leaf-cells all chlorophyllose; basal cells mostly rectangular, upper cells roundish-hexagonal; sporogones solitary or 2—6 within the same perichaetium; capsule somewhat inclined, cylindrical, often slightly curved, more rarely obovoid, never prismatic; neck very short, without stomata; peristome single; lid hemispherical or arched-conical, beak long; calyptra hood-shaped beaked, mostly glabrous, rarely hairy; ground-mosses of tropical mountainous and of temperate regions.

(493′) **Catharinaea.**** p. 117.

14. Stem erect, rigid, with basal rhizoids, up to 12 cm. in height, commonly in its lower part devoid of leaves, upwards densely foliose; leaves spreading, lanceolate-subulate, upwards sharply serrate, when dry crisp, nearly tubular; midrib valid, extending to near the leaf-tips; lamellae 20—33; leaf-cells roundish-hexagonal, small, thick-walled; seta 5—6 cm. long, rigid, yellowish-red; capsule suberect, ultimately subhorizontal, ovoid to ellipsoidal;

peristome wanting ; lid conical, beaked ; calyptra hood-shaped, smooth, covering only the lid ; from Nepal to Yünnan.

(501′) **Lyellia crispa.**** p. 118.

— Lower part of the stem rhizomatoid ; gametophyte short or elongate ; peristome present ; calyptra short, hood-shaped, giving rise to long hairs forming a dense felt enveloping the capsule, less frequently reaching down to near the base of the urn, felty 15

15. Neck of capsule without stomata, epidermal cells of the capsule usually mamillarly protruding ; cells of the leaf-blade roundish-hexagonal, marginal cells quadratic or transversely oblong, those of the leaf-sheath oblong to linear ; seta slender ; capsule erect or inclined, prolate-spheroidal or ellipsoidal ; lid cupola-shaped ; beak short or long ; calyptra usually short and small, hood-shaped, producing a dense felt of hairs enveloping the capsule ; cosmopolitan ground-mosses.

(503′) **Pogonatum.**** p. 118.

Neck of capsule with large stomata ; epidermal cells of capsule not mamillar ; cells of the leaf-blade small, quadratic and hexagonal, of the leaf-sheath rectangular-oblong to linear, hyaline ; seta long ; capsule at first erect, later on inclined to horizontal, usually tetragonally to hexagonally prismatic ; neck hemispherical or discoid ; peristome-teeth numerous (64) ; lids cupola-shaped or conical, beak long or short, curved or straight ; ground- or swamp-mosses, rarely on rocks, inhabitants of temperate and colder regions, in the Tropics chiefly on mountains.

(511′) **Polytrichum.**** p. 119.

16. Stem up to 40 cm. in height, with a well defined polytrichoid axial column ; leaves lanceolate to linear and lanceolate-subulate ; midrib upwards stronger, projecting beyond the leaf-tip ; lamellae numerous, chlorophyllose ; capsule erect, finally horizontal and dorsiventral ; peristome consisting of numerous, slightly sperally twisted bristles ; lid conical ; calyptra small hood-shaped, hairy, the hairs enveloping the capsule ; ground-mosses of the Indian Archipelago and Australia.

(520′) **Dawsonia.** p. 120.

— Plants small; midrib beset ventrally with rows of dichotomously branched green pluricellular filaments; calyptra glabrous 17

17. Axial column absent; midrib scarcely or not at all projecting beyond the leaf-tip; peristome-teeth 32, sinistrorsely twisted, papillose; plants bud-like; leaf-cells rectangular-oblong and hyaline below, upwards quadratic; seta elongate; capsule cylindric or prolate-ovoid; lid beaked; calyptra hood-shaped, beaked; ground- and wall-mosses, also on calcareous rocks in temperate regions.

(294) **Aloina.** p. 42.

— Stem with a clearly defined axial column; midrib produced beyond the leaf-tip as a hair; peristome-teeth 32, sinistrorsely twisted or straight and irregularly split or fenestrate; seta elongate, straight; capsule elongate-ellipsoid, erect or somewhat inclined; lid conical, beak slightly oblique; calyptra hood-shaped, beaked, reaching down to the middle of the urn on walls and calcareous rocks in temperate regions.

(293) **Crossidium.** p. 41.

18. Capsule opening by valves, which may remain united at base and apex; calyptra cap-shaped, irregularly ruptured at the middle, caducous; leaves ovate, elliptic or oblong and upwards lanceolate or panduriform and obtuse or narrowly lingulate at the apex; midrib present or absent; leaf-cells roundish or quadratic, longer at the leaf-base; mostly on non-calcareous rocks and rock-debris in temperate and arctic regions.

(129) **Andreaea.**** p. 16.

— Capsule either indehiscent or opening by a lid . . . 19

19. Capsule either entirely without a lid or the lid not or only rarely falling off spontaneously 20

— Capsule opening by a deciduous lid; joint between the lid and the urn well defined at an earlier stage . . . 25

20. Seta elongate, slender; calyptra as long as the capsule or longer, fusiform, ultimately opening out by a longitudinal slit; plants tall; leaves ovate-oblong, attenuated into a delicate sinuous point; midrib reaching up to the leaf-tip or projecting beyond it; leaf-cells thin-walled,

hexagonal, longer downwards; capsule erect or slightly inclined, prolate-spheroidal; ground-mosses of higher alpine and of arctic regions.

(335) **Voitia.**** p. 46.

— Seta very short 21

21. Calyptra very delicate, enveloping the spherical capsule; capsule-wall either bursting open irregularly or gradually decaying; spores 100—200 μ in dia.; leaves upwards tufted, ovate-lanceolate to lanceolate subulate; temperate and tropical ground-mosses.

(155) **Archidium.**** p. 19.

— Calyptra firmer, shorter than the capsule, hood- or cap-shaped 22

22. Lid clearly outlined, but very rarely deciduous; margin of leaves bent inwards; leaf-cells both dorsally and ventrally densely warty; ground-mosses of temperate and tropical regions.

(250) **Astomum.**** p. 35.

— Lid not indicated; leaf-margins bent backwards, sometimes flat 23

23. Upper leaf-cells narrow, sublinear or elongate rhombic or hexagonal, towards the leaf-base oblong; leaves increasing in size from below upwards, uppermost leaves much longer canaliculate and subulate or ovate-oblong and ventrally very concave; capsule ovoid, bluntly pointed; calyptra hood-shaped reaching downwards to about the middle of the capsule; ground-mosses of temperate and tropical regions.

(157) **Pleuridium.**** p. 19.

— Upper leaf-cells isodiametric, quadratic or hexagonal . . 24

24. Capsule spherical or shortly spheroidal; calyptra short; leaves ovate- or oblong-lanceolate; ground-mosses of temperate regions.

(284) **Phascum.** p. 41.

— Capsule prolate-spheroidal; calyptra reaching down to the middle of the capsule; peristome consisting of 16 filiform teeth; upper leaves ovate-oblong to lanceolate; ground-moss of temperate regions.

(290) *Subgenus* **Miledella** *of* **Pottia.** p. 41.

25. Inner surfaces of the longitudinal and sometimes also of the end-walls corrugated or undulate 26

— Inner surfaces of the walls of the leaf-cells even, not corrugated nor undulate 29

26. Midrib absent; stem stoloniferous; branches irregularly or subpinnately disposed; leaves broadly ovate to ovate-oblong, rarely ovate-lanceolate, margin mostly revolute; leaf-cells quadratic or short-rectangular, upwards longer, papillose, the pluriseriate basal marginal cells quadratic, median basal cells linear, brownish, capsule erect and straight or slightly inclined, prolate-spheroidal to cylindric; peristome absent; lid conical, acute or beaked; calyptra hood-shaped, covering two thirds of the urn, sometimes nearly bell-shaped; mostly on rocks and stones, rarely on trees, in tropical and subtropical mountainous regions.

(69′) **Brauvia.**** p. 65.

— Midrib valid 27

27. Midrib broad and flat; deuter cells basal, more than 2; sporogones both terminal on the main axis and on lateral short shoots; peristome-teeth bipartite; leaf-cells either all of them or at least the lower ones linear; stem always without anaxial column; seta straight; capsule erect, ovoid to subcylindric; lid conical, beak subulate; calyptra cap-shaped, lobed; mostly on siliceous rocks and rock-debris, cosmopolitan.

(312) **Rhacomitrium.**** p. 44.

— Midrib plano-convex or biconvex; plants strictly acrocarpic 28

28. Leaves markedly hygroscopic, when moistened suddenly bending back, then straightening themselves out and finally remaining erecto-patent; axial column present or absent; leaves flexible or rigid, not fragile; leaf-cells mostly smooth, upper cells small, rounded-quadratic, basal cells, at least the median ones rectangular and linear, commonly hyaline and colourless, more rarely yellow; peristome-teeth entire or unequally bifid, or fenestrate; growing both on calcareous and siliceous rocks and rock-debris, mostly in temperate regions.

(306) *Species of* **Grimmia.**** p. 43.

— Leaves fragile dry incurved and sinuous or twisted, margins strongly wavy, linear-lanceolate, acute or sub-obtuse; leaf-cells rounded-quadratic, finely papillose, gradually longer downwards, basal cells narrow-linear, strongly pitted, yellowish-red, at the leaf-corners paler and forming a triangular group, marginal cells linear and transparent, forming a seam; sporogones unknown; a Burmese moss.

(264) **Chionoloma.**** p. 37.

29. Hyaline cells (leucocysts, hyalocysts), where present, *either* occupying the meshes of a network formed of much narrower chlorocysts, *or* the median portion of the leaf-blade consisting of two or more strata of leucocysts, *or* either the ventral or dorsal superficial layers of the broad midrib consisting of hyaline cells 30

— Hyaline cells either entirely absent or confined to the leaf-sheath or, in addition, to the extra-costal and usually only the lower part of the leaf-blade, sometimes extending upwards for some distance along the leaf-margin, rarely the majority of the leaf-cells transparent . . 42

30. Hyaline cells *either* surrounded by a set of much narrower chlorophyllose cells *or* forming two or more strata associated with strata of chlorophyllose cells; hyaline cells pierced by perforations 31

— Either the ventral or both the ventral and dorsal layers of the broad, flat or somewhat convexoconcave midrib consisting of hyaline cells; midrib rarely less in width than one-third of the leaf-base, often proportionately considerably broader; apex of leaves long-subulate . 39

31. The hyalocysts occupying the meshes of a network of much narrower and often ± overlapped chlorocysts, pierced on their ventral and dorsal walls by orifices allowing the entrance of air and water; leaves consisting of a single layer of cells; midrib absent; calyptra at first completely enclosing the capsule, finally irregularly ruptured and remaining behind at the base of the capsule; lid and spore-mass thrown off together; peristome absent; in peat-bogs and other wet or damp places, on the banks of streams, on heaths and wet rock-faces near water-falls.

(113) **Sphagnum.**** p. 15.

— A broad median portion of the leaf-blade (pseudolamina) consisting of two or more strata of leucocysts commonly

pierced by perforations, the narrower chlorocysts forming an intermediate stratum or, in addition, a ventral and a dorsal stratum 32

32. Leaf-blade with a median narrow band of stereids imitating a narrow midrib; branches ending at about the same level; leucocysts in two layers; marginal cells very narrow, upwards in several layers; seta terminal or lateral; capsule erect, prolate-spheroidal; peristome-teeth without a median line; lid conical, beak long and straight; calyptra reaching down to the base of the capsule, margin entire; tropical tree-mosses.

(224) **Leucophanes.**** p. 30.

— Leaf-blade without a median band of stereids . . . 33

33. The Chlorocysts forming a single layer 34

— Chlorocysts, at least upwards, forming three layers . . 38

34. Chlorocysts in cross-section triangular, at least in the upper part of the leaf, the chlorocysts arranged in a zigzag manner; leaves erecto-patent or squarrosely spreading recurved, above the base oblong or obovate, upwards linear-lingulate to lorate, mucronate; seta terminal or lateral, short or longer; capsule not immersed, prolate-spheroidal to cylindrical; peristome single, teeth 8 or 16; lid conical, beak subulate; calyptra hood-shaped, reaching down to the middle of the urn; plant-mass whitish-green to whitish; on bark, frequently on palm-stems in the Tropics.

(225) **Octoblepharum.**** p. 30.

— Chlorocysts in cross-section four-sided, situated at the junction of four leucocysts 35

35. Leaves gradually attenuated from an ovate or obovate lower into a lanceolate often cucullate upper part; capsule inclined, asymmetrically subellipsoid, often with a basal crop-like, protrusion; peristome-teeth subulately bifid; calyptra inflated, enveloping the whole capsule; on trees, rocks and shady ground in tropical and subtropical regions.

(223) **Leucobryum.**** p. 29.

— Leaves upwards channelled or subtubular, or subulate, terminating in a spicule or hair-point; capsule hemispherical, spherical or cylindric 36

36. Leaves erecto-patent, upwards channelled or subtubular, lower part oblong or ovate-oblong, upper part narrowly lanceolate to subulate, apex blunt or terminating in a spicule, towards the apex with a marginal seam ; capsule immersed, hemispherical, after the fall of the lid cup-shaped ; peristome absent ; lid conical, beak straight and very long ; calyptra conical-subulate, covering only the lid, margin ciliate ; tropical and sub-tropical.

(221) **Ochrobryum.**** p. 29.

— Leaves imbricate and, at least when dry, adpressed ; seta elongate ; capsule cylindric ; peristome single, teeth 16 . 37

37. Plant-mass bluish-green to whitish, leaves densely and closely imbricate, the upper cuculate, ending in a hair-point ; sporogones terminal on short lateral shoots ; lid ending in a subulate beak ; calyptra conical cap-shaped ; margin not ciliate ; bark-mosses of the Indian Archipelago.

(222) **Cladopodanthus.** p. 29.

— Plant-mass yellowish-green ; leaves somewhat laxly imbricate, suberect or ± unilaterally falcate, oblong or oblong-lanceolate, ending in a spicule or long hair-point ; lid of capsule conical, beak long ; calyptra slender-conical, margin lobulate, lobules ciliate ; bark- and ground-mosses of the Indian Archipelago.

(221) **Schistomitrium.** p. 29.

38. Chlorocysts always covered by leucocysts ; leaves ovate and sheathing at the base, gradually attenuated into a linear apical part, erecto-patent ; capsule cylindric ; lid conical, beak oblique ; calyptra hood-shaped ; on the bark of trees and tree-ferns in tropical regions.

(226) **Arthrocormus.**** p. 30.

— Chlorocysts forming a ventral, a dorsal and a median layer ; leaves from an obovate sheathing base attenuated into a narrow-lanceolate or awn-like apical part ; bark-mosses of tropical regions.

(227) **Exodictyon.**** p. 30.

39. Hyaline cells forming only a ventral superficial layer of the midrib, the remainder of the cells chlorophyllose ; grow-

ing on soil and soil-covered rocks in temperate and tropical, often mountainous regions.

(184) *Subgenus* **Pseudocampylopus** *of* **Campylopus.**** p. 23.

— Hyaline cells of the midrib forming both a ventral and a dorsal layer 40

40. The laminar portion of the leaf-blade consisting of a single layer of cells, much broader than the costal portion; leaves sinuously spreading or slightly oblique, passing from a lanceolate basal part into a long subulate point; cells of the sheath elongate-rectangular and -rhomble, of the subulate point linear; upper leaves broadly ovate, stem-clasping, abruptly attenuated into a very long and narrowly channelled point, capsule prolate-spheroidal; seta flexuous; peristome-teeth bipartite; lid conical, beak straight; calyptra hood-shaped, ciliate; on rotting tree-trunks in Sikkim.

(183) **Campylopodiella.**** p. 23.

— The laminar portions of the leaf forming only two narrow marginal strips; seta straight 41

41. Plants enveloped in a dense and soft felt; leaves lanceolate, auriculate and ventrally very concave below, upwards long-subulate, channelled and subtubular; midrib one-half the width of the sheath; cells of lamina hyaline, rectangular; capsule prolote-spheroidal; peristome-teeth bipartite to near their base; calyptra large, cap-shaped, margin ciliate; on rotting tree-trunks in temperate regions.

(191) **Brothera.**** p. 25.

— Stem-felt scanty or absent; leaves ending either in a long and fine point or in a shorter and obtusely pointed apex; midrib very wide; laminar cells elongate-rectangular to linear, at the leaf-corners large and quadratic, thick-walled and brownish; capsule cylindric; peristome-teeth bifid to bipartite; calyptra hood-shaped, margin entire; ground-, rock- and tree-mosses of temperate regions.

(191) **Paraleucobryum.**** p. 25.

42. Main stem *either* erect or ascending, *or* short and rhizomatoid, *or* the stems closely interwoven 43

— Main stem prostrate or creeping, or growing, vertically upwards only in deeper water, otherwise prostrate; this includes a few genera with the stem erect or ascending and beset with numerous paraphyllia (*see No. 256 of the present Key*) 223

43. Midrib extending to or beyond the middle of the leaf-blade . 44

— Midrib not reaching up to the middle of the leaf-blade, commonly much shorter, single, double or absent . . 203

44. Basal leaf-cells or the cells of the leaf-sheath transparent or translucent, without chloroplasts, often containing air only 45

— Inner or all the basal leaf-cells, at least when younger chlorophyllose, chloroplasts scanty or numerous . . 112

45. At least part of the leaf-cells mamillose, the cell-lumen protruded in a mamillar manner, *or* the mamillae confined to corners or the upper or lower ends of the cells . 46

— Leaf-cells beset with papillae or warts, or smooth . . 57

46. At least the apical part of the lamina built up of two layers of cells 47

— Cells of the leaf-blade forming a single layer right through or only the marginal cells in more than one layer forming a seam 48

47. Leaves lanceolate-linear to sublingulate, subobtuse or shortly acuminate; dorsal cells smooth; capsule cylindric, erect and straight, or slightly curved and inclined; lid conical, beaked; calyptra hood-shaped, glabrous; upper leaves tufted, when dry spirally twisted and uncinate, with inflexed margins; on calcareous soil and rocks in temperate regions.

(261) **Timmiella.**** p. 37.

— Leaves from a broad base abruptly narrowed into a long subulate tip; laminar cells mamillate both ventrally and dorsally; capsule spherical, spheroidal or ovoid, straight or curved; lid arched-conical or short-conical; urn when dry furrowed; ground- and rock-mosses, cosmopolitan, in the Tropics mostly confined to higher mountains.

(451) **Bartramia.**** p. 57.

48. Lumen of the cells protruding in the form of usually pointed mamillae 49

— Mamillae confined to the corners or ends of the leaf-cells . 55

49. Mamillae protruding only on the ventral surface . 50

— Mamillae protruding on the dorsal as on the ventral surface 52

50. Leaves broadly obovate or spatulate; stem very short; axial column absent; capsule 8-ribbed; Outer Sikkim Himalaya.

(247) **Merceyopsis angulosa.**** p. 35.

— Leaves lanceolate, lanceolate-linear or lanceolate-subulate . 51

51. Cross-section of stem obtusely trigonal; leaves in three rows; axial column single; stem with a cortical layer one or two cells in thickness; peristome-teeth about 16, bifid; on rocks in hilly temperate regions.

(196) **Cynodontium fallax.** p. 26.

— Cross-section of stem ± circular; leaves in 8 rows; axial columns two or three towards the base of branches; stem without a distinct cortical layer; peristome double, the endostome resolved into 64 cilia; inhabitants of calcareous soil and rocks, rarely of soaking-wet meadows or mud-covered tree-trunks in temperate regions.

(476) **Timmia.**** p. 59.

52. Stem branched from its very base; hair-like projection of the midrib one-third to one-half of the length of the blade; seta basal, curved in the form of an S; peristome-teeth narrow-lanceolate, entire; on rocks and on the bark of trees in the mountainous parts of the Indian Archipelago.

(425) **Hymenodon.** p. 55.

— Stem usually simple, not branched from its very base; midrib not projecting beyond the leaf-tip; acrocarpic . 53

53. Plant-mass pale-green; leaves lanceolate-linear and subulate; capsule erect, prolate-ovoid, deeply furrowed after the discharge of the spores; peristome-teeth deeply 2—3-partite; lid conical, beaked, margin crenulate; on non-calcareous rocks and stones in temperate regions.

(197) **Cynodontium polycarpum.** p. 26.

— Plant-mass bright- or yellowish-green; leaves ovate-lanceolate or lanceolate-linear, acute, or subspatulate or elliptic-lanceolate below and linear-acuminate upwards . 54

54. Leaves moderately spreading dry twisted to crisp; basal leaf-cells rectangular and even, upper rounded-quadratic; seta erect, often in pairs; capsule erect or slightly

inclined, prolate-spheroidal; peristome-teeth entire; lid conical and beaked; growing on humous soil on the ground and on rocks or on the humus filling rock-cracks in mountainous temperate and tropical regions.

(197) **Oreoweisia.**** p. 26.

— Leaves squarrosely spreading, when dry adpressed and twisted; only the median basal cells rectangular, all other cells roundish-square; seta straight; capsule nearly horizontal, monosymmetric, ovoid; peristome-teeth 2—3-partite; along water-courses on gravelly ground and wet rocks in temperate regions.

(198) **Dichodontium pellucidum.** p. 26.

55. Plant-mass dirty-green; stem either simple or branched at its very base; leaves nearly uniformly arranged; mamillae in pairs; basal part of leaves subtrapezoidal, upper part abruptly lanceolate; capsule slightly inclined, obliquely ovoid or ellipsoidal, irregularly striate or smooth; peristome-teeth 16, deeply bipartite; lid conical, beaked; a Javanese moss.

(163) **Cheilothela longirostre.** p. 20.

— Plant-mass yellowish, or pale- or bright- or bluish-green; mamillae not in pairs, except sometimes along the leaf-margins; stem dichasially branched or the subfloral branches verticillate 56

56. Rhizoids only basal; stem prostrate at the base, upwards ascending or erect; subfloral shoots verticillate; leaves lanceolate, narrowly acuminate; seta mostly curved in the form of a swan-neck; capsule horizontal or nodding, rarely erect, dry irregularly wrinkled usually subspherically pyriform; often 2—5 sporogones in the same perichaetium; peristome absent; lid shallow cupola-shaped; in hilly and mountainous temperate and tropical regions.

(459) **Bartramidula.**** p. 57.

— Rhizoid-felt dense, extending from the base upwards; stem erect, dichasially branched and with subfloral verticillate shoots; leaves ovate-lanceolate, acute or shortly acuminate; seta straight; capsule erect or inclined to horizontal, irregularly subspherical. when dry longitudinally furrowed; peristome usually double; lid shallowly

cupola-shaped or short-conical; ground- and rock-mosses, mostly in swampy or soaking-wet places near springs; cosmopolitan.

(460) **Philonotis.**** p. 58.

57. Leaves strictly distichous, from a broader half-sheathing base ± abruptly narrowed into a subulate upper part; midrib broad, with median deuter cells (eurycysts); lower leaf-cells elongate-hexagonal, rectangular-oblong or linear, higher up irregularly rhombic or triangular, in the subulate apex quadratic; capsule erect or inclined mostly prolate-ovoid, straight or somewhat curved; branches of the peristome-teeth linear or filiform; lid conical; ground - and rock-mosses, mostly on calcareous substrata in temperate and arctic regions.

(164) **Distichium.** p. 20.

— Leaves tri-to polystichous 58

58. All or at least the median basal leaf-cells yellowish or yellowish-red, or the cells of the decurrent leaf-base brownish-yellow and empty; leaf-cells ± papillose . 59

— Basal leaf-cells either all of them colourless or only a single horizontal row of cells along the line of insertion of the leaf coloured yellow, the others hyaline . . 66

59. Leaf-cells devoid of papillae or warts 60

— Leaf-cells ± papillose or warty 61

60. Axial column wide and conspicuous; leaves lanceolate-linear; apical leaf-cells roundish mixed with triangular and rectangular ones, cells downwards gradually longer, basal cells quadratic and hexagonal; capsule erect, striate, ultimately furrowed, neck narrow; lid conical, beak oblique; calyptra cap-shaped, reaching down to near the base of the capsule; growing in the cracks of walls and rocks in temperate regions.

(197) **Cynodontium tenellum.** p. 26.

— Axial column narrow; leaves from a broad base long-lanceolate to lanceolate-lingulate, when dry crisp or the tip helicoidally involute; leaf-cells upwards small and roundish-square, the basal cells linear, rectangular or quadratic, at the leaf-corners differentiated; capsule erect, ellipsoid, neck short; peristome simple; lid conical, beak long, straight and thin; calyptra reaching down

to the middle of the urn, bell-shaped, plicate, margin laciniate ; on rocks, rarely on trees, in temperate regions.

(8) **Ptychomitrium.** p. 60.

61. Axial column absent 62
— Axial column present 63
62. Midrib with two basal deuter cells, otherwise homogeneous ; only the narrow-linear basal cells yellow, at the line of insertion yellowish-red, the marginal basal cells in several rows thin-walled and hyaline, rectangular or quadratic, the remaining leaf-cells subisodiametric, both ventrally and dorsally with a papilla ; seta projecting beyond the perichaetium ; capsule prolate-spheroidal, attenuated towards the base, marked with 8 longitudinal striae, ribbed when dry ; lid cupola-shaped or conical, beaked ; calyptra conically bell-shaped, margin laciniate, usually beset with golden-yellow hairs ; mostly bark-, rarely rock-mosses of temperate, subtropical and tropical regions.

(24′) *Species of* **Ulota.**** p. 62.

— Midrib with 2 to 4 median deuter cells and usually also two bands of stereids ; basal cells elongate-rectangular, yellow (or hyaline), the remainder of the cells rounded-4—6-sided both ventrally and dorsally densely beset with small, one or two-pointed papillae ; seta (often 2—4) elongate, sinuous ; capsule cylindric, usually straight ; lid conical with or without a beak ; calyptra hood-shaped ; ground-, rock- and tree-mosses of tropical and subtropical regions.

(266) **Leptodontium.**** p. 37.

63. Basal leaf-cells red or yellowish-red 64
— Basal leaf-cells yellow 65
64. Marginal cells green or yellow ; plant-mass red or brownish ; leaves from a broader base lanceolate, margins revolute ; leaf-cells roundish-quadratic, longer near the base, upper cells papillose or warty ; ground- and rock-mosses of temperate regions.

(272) *Subgenus* **Erythrophyllum** *of* **Didymodon.**** p. 38.

— Marginal leaf-cells hyaline, forming a 3—5-seriate seam, upper leaf-cells roundish quadratic, finely papillose, lower leaves gradually more elongate ; cell-walls thick,

inner-surface undulate; basal leaf-cells narrow-linear, cells at the leaf-corners forming a triangular paler-coloured groups; a Burmese moss [*see also No. 28 of the Key*].

(264) **Chionoloma.**** p. 37.

65. Plant-mass red to brown; leaves from a broader base lanceolate or linear oblong, margin recurved; ground- and rock-mosses of temperate and subtropical mountainous regions.

(273) *Species of* **Didymodon.**** p. 38.

— Plant-mass bright- or yellowish-green; leaves narrow-lanceolate to linear, margins flat or incurved; cosmopolitan ground- and rock-mosses.

(260) *Species of* **Trichostomum.**** p. 36.

66. Leaf-cells without papillae or papillar eminences only over the outer edges of the inner cell-walls 67
— Leaf-cells papillose, papillae commonly ± numerous, rarely scanty 86
67. Alar cells clearly differentiated, sometimes disorganized at an early stage 68
— Alar cells not differentiated 72
68. Capsule with a crop-like emergence near its base; leaves when moist erecto-patent to squarrosely spreading, sheathing at the base, upwards long-acuminate to canaliculate and subulate, keeled, margins erect or recurved; midrib ending in the leaf-tip or projecting beyond it; leaf-cells near the leaf-base rectangular-oblong, upwards mostly roundish quadratic, forming two layers along the margin; seta long; capsule irregularly subcylindric-obovoid, unilaterally convex; peristome-teeth connate at their base into a tube adnate by means of a cellular plate to the wall of the capsule, upwards bifid; lid conical, beak oblique; on moist ground, wet rocks, rotting tree-trunks and in swamps in temperate and hilly tropical regions.

(200) **Oncophorus.**** p. 26.

— Capsule without a crop like emergence 69
69. Axial column wanting; rhizoid-felt not developed; alar cells or the adjacent leaf-cells not resorbed, brownish;

leaves ovate-lanceolate, gradually acuminate, with a very narrow seam; leaf-cells small, rounded-quadratic, conspicuously chlorophyllose, basal cells linear: seta erect; capsule inclined, monosymmetric, when dry curved; peristome-teeth bifid; beak of lid oblique; tree- and rock-mosses of the Indian Archipelago.

(212) **Dicnemoloma.** p. 28.

Axial column well defined 70

70. Midrib narrow, only at its basal part apparently broader, being bordered there on either side by a band consisting of two layers of laminar cells; leaves mostly unilaterally falcate, lameolate below, upwards subulate and canaliculate or subtubular; peristome-teeth 2-3-partite to or beyond the middle; on various substrata, cosmopolitan, in the Tropics only in mountainous regions.

(205) **Dicranum.**** p. 27.

— Midrib flat and moderately broad 71

71. Alar cells early disorganized; leaf-cells elongate to linear, cells of the leaf-sheath near the midrib wider, rectangular or elongate-hexagonal, the marginal and submarginal cells narrow-linear, forming a seam; midrib with a series of deuter cells accompanied by ventral and dorsal bands of stereids; seta at first decurved, finally erect and sinuous; capsule ovoid to cylindric; peristome-teeth 16, divided to the base into two filiform segments; calyptra hood-shaped, enveloping nearly the whole of the capsule; on forest ground, rotting tree-trunks and shaded non-calcareous rocks.

(190) **Dicranodontium.**** p. 25.

— Alar cells persistent, extending inwards to the midrib, often inflated, colourless or tinted, the neighbouring upper cells mostly empty; lamina narrow, rarely bordered by a seam; most of the leaf-cells elongate-rhombic or obliquely elliptic; midrib commonly occupying three-fourth of the leaf-blade, mostly with median deuter cells accompanied or no by bands of stereids; seta at first recurved, ultimately erect and sinuous; capsule prolate-spheroidal or ellipsoidal, usually striated or deeply furrowed; peristome-teeth bifid to the middle,

rarely lower down; calyptra hood-shaped, small; on dry ground, soil-covered rocks, rotting tree-trunks and peat, cosmopolitan.

(183) **Campylopus.**** p. 23.

72. Plants bud-like, rarely exceeding 2 mm. in height, forming small silverish-green tufts on lime-stone and slate-rocks; midrib only feebly developed; upper leaf-cells with scanty chloroplasts; capsule erect, prolate-spheroidal; in temperate regions.

(291) **Stegonia.** p. 41.

— Plants not beed-like, stems short or ± elongate 73

73. Leaves from a broad sheathing base abruptly contracted into a linear upper part with spirally involute margins; midrib usually slightly excurrent; seta very short; beak of lid long; calyptra large, bell-shaped, enveloping the capsule; axial column absent; plant-mass dark-green to greenish-black; growing on very dry rock-faces in Turkistan.

(305) **Indusiella.** p. 43.

— Leaves ovate-oblong, obovate or oblong-spatulate to lanceolate and linear; plant-mass blackish- or reddish-brown to red, or dirty-, bright- or yellowish-green, or pale-coloured. 74

74. Plant-mass blackish-brown, scarcely 1 cm. high; leaves oblong-lanceolate, obtuse or minutely apiculate, the upper ones very opaque, the lower transparent; hymenium present; seta short.

Hymenostomum obscurissimum.** p. 35.

— Plant-mass, at least at the peripheral parts, red, brown, bright-green or pale-coloured 75

75. Plant-mass very pale-coloured; leaf-cells very laxly knitted and transparent; midrib delicate, extending to the leaf-tip or ending a short distance below it; lower leaves ovate-lanceolate, upper obovate-oblong or lanceolate from an obovate base; capsule subpyriform; beak of lid short; Nilgiris.

(287) **Beddomiella funarioides.**** p. 41.

— Plant-mass deeper coloured 76

76. Axial column present 77
— Axial column absent or indistinct 79
77. Plant-mass densely interwoven by a rust-brown felt of rhizoids ; axial column clearly developed, but not sharply delimited from the fundamental tissue ; cortical cells forming a layer one cell in thickness ; upper leaf-cells short-elliptic ; midrib occupying about two-thirds of the width of the leaf-base, thinning out upwards and ending before reaching the usually obtuse leaf-tip ; lid of capsule small, conical, blunt ; growing in swamps and peat-bogs and on wet humus in rock-cracks in cold and temperate regions.

(444) **Meesea.**** p. 57.

— Plant-mass not densely interwoven by rhizoids, the rhizoids either only basal or extending for some distance up the main stem and the branches ; axial column clearly defined ; an outer cortical layer not differentiated 78
78. Plant-mass pale-green ; leaves flaccid, the lower obovate-oblong or elliptic-lanceolate, margins usually flat ; midrib ending at some distance below the leaf-tip ; upper leaf-cells elongate-rhombic-subhexagonal, densely chhorophyllose, basal cells rectangular-oblong, transparent ; seta long, upwards twisted ; capsule with an upright neck, urn inclined, ellipsoidal ; exostome shorter than the endostome ; lid short-conical, blunt ; young calyptra somewhat inflated ; inhabitant of temperate regions.

(444) **Amblyodon dealbatus.** p. 57.

— Plant-mass reddish-brown to red ; leaves firm, lanceolate from a broader base, margins recurved ; upper or most of the leaf-cells rounded-square ; midrib either reaching close up to the leaf-tip or projecting slightly beyond it ; capsule erect, mostly straight ; peristome-teeth 16, entire or fenestrate or bipartite ; lid conical, beaked ; ground- and rock-masses, cosmopolitan, inhabitants mostly of temperate regions.

(271) **Didymodon.**** p. 38.

79. Leaves ovate-lanceolate, oblong-lanceolate or linear-lanceolate, acute or obtuse 80
— Leaves spatulate or lanceolate-spatulate, sometimes linear-oblanceolate 83

80. Leaves narrowly lanceolate or oblong-linear, upwards coarsely serrate; leaf-cells upwards rounded-quadratic, hexagonal or transversely elliptic, basal cells rectangular; seta erect; capsule small, ovoid or prolate-ovoid; lid conical, beak long and oblique; growing in cracks of siliceous rocks in temperate regions.

(194) **Rhabdoweisia.**** p. 26.

— Leaves elliptic-oblong or ovate-, elliptic- or linear-lanceolate; capsule proiate-ellopsoid to cylindric, striate or furrowed 81

81. Axial column poorly developed; upper leaf-cells elongate-subhexagonal or rectangular, rarely nearly square; calyptra hood-shaped; on calcareous rocks in temperate regions.

(168) **Seligera.** p. 20.

— Axial column entirely wanting; upper leaf-cells round, rarely nearly square 82

82. Calyptra hood-shaped, not plicate; in tropical subtropical and warmer temperate regions.

(11′) *Some species of* **Zygodon.**** p. 60.

— Calyptra conically bell-shaped, plicate tree- and rock-mosses, mostly of temperate regions.

(17′) *Some species of* **Orthotrichum.**** p. 61.

83. Midrib ending at some distance from the leaf-tip; leaves from an oblong or spatulate base passing into an upper elliptic, apiculate part, with a hollow keel; cells laxly knitted, chlorophyllose, square, comparatively large; capsule obovoid, 8-ribbed; endostome wanting, teeth of exostome 16, connate in pairs; calyptra cap-shaped, reaching down to the middle of the urn, bilobed; lid short-conical, ending in a short point; on rotting tree-trunks in tropical and subtropical regions.

(16′) **Rhachithecium.**** p. 61.

— Midrib ending at, or close to the leaf-tip; leaf-cells closely knitted, chlorophyllose, square, rounded-square, sub-hexagonal or polygonal; capsule prolate-ellipsoid or cylindric; peristome wanting; calyptra hood-shaped 84

84. Leaves with a marginal rim, upwards tufted, when dry erect or undulately folded; midrib prominent dorsally; deuter cells ventral; upper leaf-cells square or polygonal, lower rectangular; seta long; capsule suberect, spheroidal; lid low cupola-shaped, beak long and straight; temperate and tropical regions.

(247) **Merceya.** p. 35.

— Leaves without a marginal rim; deuter cells median 85

85. Axial column entirely absent; capsule prolate-spheroidal, usually rather wide, rarely narrow; cells of exothecium thin-walled, lax, hexagonal; leaves when dry usually crisp, in some species strongly involute; midrib dorsally prominent; leaf-cells rounded-square or haxagonal, basal cells rectangular and transparent; mostly rock-, rarely tree-mosses of temperate, subtropic and tropical regions.

(247) **Merceyopsis.**** p. 35.

— Axial column ± distinct, sometimes indistinctly delimited from the ground-tissue or obscure; capsule cylindric, rarely elongate-spheroidal; cells of exothecium thick-walled and rectangular; margins of leaves when dry mostly strongly involute; midrib upwards subterete; leaf-cells hexagonal, near the leaf-base rectangular; capsule erect; lid elongate-conical, beak oblique; on walls (rocks and soil) in the Tropics.

(269) *Species of* **Hyophila.**** p. 38.

86. Papillae horse-shoe-shaped; leaves when dry conduplicate and twisted, ± cymbiform, ovate-oblong, obovate- or linear-lanceolate; midrib commonly exceeding the leaf-blade as a spicule or awn; papillae both ventral and dorsal; leaf-cells rounded-4-6 sided or rhombic, lower rectangular or elongate-hexagonal; seta elongate; capsule ovoid to cylindric; peristome-teeth 2- to 3-partite, oblique or somewhat sinistrorsely twisted; beak of lid thick and oblique; calyptra hood-shaped, glabrous, beaked; mostly on humous ground in temperate regions.

(293) **Desmatodon.**** p. 41.

— Papillae not horse-shoe-shaped 87

87. Papillae denticulate or drawn out into one or two points 88

— Papillae blunt or cylindrical and acute 89

88. Stem with an axial column; papillae denticulate; beak of lid long needle-shaped or slender-clavate; deuter cells median, in 2 to 3 layers accompanied by a strong dorsal band of stereids; leaf-cells upwards rounded-polygonal; seta elongate; capsule erect, cylindric; mostly on calcareous ground and rocks and in cracks of walls in colder and temperate regions, in the Tropics only on mountains.

(241) **Encalypta.**** p. 34.

— Stem without an axial column; papillæ drawn out into one or two points; beak of lid neither needle-shaped nor clavate; deuter cells 2 or 3, accompanied by 2 stereid bands; leaf-cells upwards rounded-polygonal or elliptic, lower longer; cell-walls often ± sinuous; capsule cylindric; lid conical, without or with a beak; ground-, rock- and tree-mosses in tropical and temperate regions.

(266) **Leptodontium.**** p. 37.

89. Transition from the basal rectangular hyalocysts to the upper ± isodiametric cells quite gradual . . . 90

— Transition ± abrupt 92

90. Capsule pear-shaped with 8 longitudinal ribs; seta short; peristome wanting; plant-mass yellowish olive-green to blackish variegated reddish-brown; stem with rhizoids extending from the base upwards; leaves when dry flexuous or crisp, linear-lanceolate; leaf-cells rounded-polygonal, lower rectangular-oblong; rock-mosses of cold and temperate regions.

(192) **Amphidium.**** p. 25.

— Capsule elongate-ellipsoid or subcylindric; seta elongate; peristome present 91

91. Leaves when dry mostly crisps, often fragile, the upper ones much larger and tufted, very concave to canaliculate ventrally, margins erect or incurved; leaf-cells above small and roundish, papillose on both sides, lower rectangular; capsule erect or slightly inclined, elongate-spheroidal to cylindric; lid conical, beaked; ground-, wall-, rock- and tree-mosses of temperate and tropical regions.

(260) *Species of* **Trichostomum.**** p. 36.

— Leaves when dry never crisp, mostly plicate or twisted, moist mostly keeled, commonly lingulate or spatulate, mostly with revolute sometimes with incurved margins, often bordered by a seam ; midrib often terete, prolonged beyond the leaf-blade as a spicule or hyaline hair ; upper cells rounded-hexagonal, usually papillose both dorsally and ventrally, gradually passing downwards into quadratic and finally into rectangular-oblong cells ; capsule erect, mostly cylindric ; peristome consisting of a basal tube and 32 filiform, sinistrorsely twisted teeth ; lid conical, beak thick and oblique ; calyptra hood-shaped commonly reaching down to at least the middle of the urn ; on stony dellivities, walls, rocks, roofs and road-sides, mostly in temperate regions.

(295) **Tortula.**** p. 42.

92. Mouth of the capsule closed by a membrana (hymenium) ; peristome-teeth absent ; leaves gradually increasing in size upwards, when dry crisp, channelled, lanceolate-linear, with erect, inflexed or involute margins ; midrib produced as a spicule ; leaf-cells upwards very small, rounded-quadratic, densely papillose both dorsally and ventrally, the basal cells rectangular-oblong ; seta comparatively short ; capsule erect or slightly inclined, prolate-ovoid or -spheroidal to cylindric, sometimes monosymmetric ; lid conical, beak subulate ; on the ground or in clefts of rocks and walls, cosmopolitan.

(253) **Hymenostomum.**** p. 35.

— Mouth of the capsule not closed by a membrane . . 93

93. Growing on soil, wet grounds, rock-faces, sometimes on rotting tree-trunks, very rarely spreading to the bark of trees 94

— Growing on the stems and branches of trees, sometimes spreading on to the ground below, very rarely met with on rock-faces 106

94. Plants minute, forming a velvety coating on walls or on the faces of limestone-rocks : sterile plants bearing clavate or barrel-shaped broad-bodies ; protonematic filaments arising from the axils of leaves ; leaves broadly spatulate ; leaf-cells 4-6 sided, warty or mamillate, basal cells rectangular-oblong ; capsule erect, prolate-spheroidal ;

peristome wanting; lid low-conical, beak long and oblique; in tropical regions.

(334) **Gymnostomiella.**** p. 46.

— Plants not minute, either of low growth or more slender . 95

95. Peristome-teeth free, filiform, twisted to the left; leaves spreading to squarrosely recurved, flexuous, when dry very crisp, lanceolate-linear to subulate, undulate at the margin, shining white at their base; upper leaf-cells chlorophyllose, small, rounded-quadratic, both ventrally and dorsally warty, lower leaf-cells and those of the marginal seam rectangular-oblong, smooth, hyaline; seta elongate; capsule erect or inclined, elongate-ovoid to cylindric; peristome-teeth 32; lid elongate-conical; ground- and rock-mosses, cosmopolitan.

(262) **Tortella.**** p. 37.

— Peristome-teeth absent or when present not twisted . 96

96. Plant-mass impregnated with calc-tuff; peristome-teeth oblique, linear-lanceolate, ± fenestrate and usually irregularly and shortly bifid; leaves from a white and shining base gradually long-accuminate; leaf-cells rounded-quadratic, both ventrally and dorsally beset with round papillae, the basal cells rectangular-oblong, narrower at the leaf-margin; seta elongate; capsule erect, prolate-spheroidal to cylindric; lid conical, red, beak subulate oblique; on calcareous rocks, walls, and near calcareous springs in temperate and warmer regions.

(257) **Eucladium verticillatum.** p. 36.

— Plant-mass not impregnated with calc-tuff 97

97. Axial column present, at least in the leafy part of the stem 98

— Axial column wanting 101

98. Upper margins of leaves recurved or revolute . . 99

— Upper margins of leaves flat or incurved . . . 100

99. Plant-mass red to reddish-brown; stem beset with rhizoids for some distance upwards; leaves lanceolate from a broad base; peristome-teeth 16, entire or deeply bipartite, nearly filiform; ground- and rock-mosses, cosmopolitan.

(273) *Species of* **Didymodon.**** p. 38.

— Plant-mass brownish-green or dark- to pale-green ; rhizoids confined to the base of the stem ; peristome absent or rudimentary or with 16, 2-3-fid teeth.

(289) *Species of* **Pottia.** p. 41.

100. Leaves lanceolate-subulate, upper ones much larger, all of them keeled, dry crisp; midrib usually ending in a spicule ; leaf-cells small, roundish, both ventrally and dorsally with low papillae ; seta mostly somewhat longer than the perichaetial leaves ; capsule either erect and prolate-spheroidal or monosymmetric and ellipsoidal to cylindrical ; peristome-teeth short or rudimentary ; ground-mosses or growing on soil in cracks in walls and rocks, cosmopolitan.

(254) **Weisia.**** p. 35.

— Leaves lanceolate or lanceolate-linear, acuminate, apiculate or acute, upper larger and tufted, all of them keeled, ventrally concave or canaliculate, when dry crisp ; midrib usually projecting beyond the leaf-blade ; leaf-cells small, rounded-quadratic, papillose both dorsally and ventrally, lower cells rectangular-oblong ; seta elongate ; capsule erect, rarely slightly inclined, prolate-spheroidal to cylindric ; peristome-teeth entire or bipartite, segments filiform, ground-, wall- and rock-mosses : widely distributed.

(260) **Trichostomum.**** p. 36.

101. Leaves spatulate, oblanceolate or oblong-subspatulate . **102**

— Leaves lanceolate, ovate-lanceolate or lanceolate-linear . **105**

102. Deuter cells dorsal ; pleurocarpic ; plant-mass felted ; leaves linear-oblanceolate, keeled, adpressed when dry, sometimes spirally adpressed, apex incurved and twisted ; midrib strong, mostly ending below the leaf-tip ; leaf-cells rounded-hexagonal or -quadratic, both ventrally and dorsally densely papillose, lower cells rectangular ; capsule elongate-obovoid ; lid arched-conical, beak long and oblique ; calyptra hood-shaped, beaked, reaching down to the middle of the urn ; mostly on rocks. rarely on the ground ; cosmopolitan.

(245) **Anoectangium.**** p. 34.

— Deuter cells median or ventral; acrocarpic . . . 103

103. Deuter cells ventral; leaves with a marginal rim, upwards tufted, when dry erect or undulately folded; midrib prominent dorsally; upper leaf-cells square or polygonal, lower rectangular; seta long; capsule suberect, spheroidal; lid cupola-shaped, beak long and straight; temperate and tropical regions.

(247) **Mercaya.** p. 35.

— Deuter cells median; leaves without a marginal rim . . 104

104. Axial column entirely absent; capsule prolate-spheroidal, usually rather wide, rarely narrow; cells of exothecium thin-walled, lax, hexagonal; leaves when dry usually crisp, in some species strongly involute; midrib dorsally prominent; leaf-cells rounded-square or hexagonal, basal cells rectangular; mostly rock-, rarely tree-mosses of tropical, subtropical and temperate regions.

(247) **Merceyopsis.**** p. 35.

— Axial column ± distinct, sometimes obscure, often indistinctly delimited from the fundamental tissue; capsule cylindric, rarely elongate-spheroidal; cells of exothecium thick-walled and rectangular; leaf-margins when dry mostly strongly involute; midrib upwards subterete; leaf-cells hexagonal, near the leaf-base rectangular; capsule erect; lid conical, beak oblique; on walls, rocks and soil in the Tropics and Subtropics.

(269) **Hyophila.**** p. 38.

105. Upper stem-leaves scarcely larger than the lower ones, usually recurved; calyptra hood-shaped, not plicate; leaf-cells roundish or 4-6-sided, papillose both dorsally and ventrally, basal cells rectangular; seta long; capsule prolate-spheroidal or elongate-ovoid, mostly striate or furrowed; neck long; lid cupola-shaped, beak short or long, mostly oblique; rock-mosses (more commonly tree-mosses) mostly of tropical regions.

(11′) *Species of* **Zygodon.**** p. 60.

— Upper stem-leaves distinctly larger than the lower, straight incurved, when dry never crisp, ovate lanceolate to lanceolate-linear, acute, more rarely obtuse; calyptra bell-shaped, longitudinally ± plicate, covering the

greater part of the urn ; leaf-cells elliptic, lower rectangular ; capsule ovoid to cylindric, usually with 8 or 16 striae, when dry furrowed ; on rocks and stones mostly in temperate regions.

(17′) *Species of* **Orthotrichum.** 61.

106. Leaves ovate or ovate-oblong, ventrally very concave ; capsule hidden within the perichaetium ; plant-mass bluish-, yellowish- or brownish-green ; stem furcately branched ; leaves when dry imbricate, ovate or ovate-oblong, apex rounded ; leaf-cells on both sides of the midrib rectangular, marginal cells shorter to quadratic ; peristome double ; in temperate regions.

(23′) **Stroemia obtusifolia.**** p. 62.

— Leaves long- and narrow-lanceolate or -oblanceolate, sometimes sublingulate or lorate 107

107. Midrib not bearing brood-bodies ; leaves with a hyaline seam ; deuter cells in one row associated with two bands of stereids continued to the leaf-tip ; capsule erect, cylindric ; calyptra hood-shaped ; in the Tropics.

(229) **Syrrhopodon.**** p. 30.

— Midrib bearing brood-bodies 108

108. The clusters of brood-bodies inserted midways between base and apex of the midrib ; peristome present ; calyptra cap-shaped, deeply lobed ; deuter cells median ; leaf-cells small, roundish-square, lower cells rectangular or sub-hexagonal ; calyptra cap-shaped, margin lobulate ; tropical.

(235) **Calymperopsis.**** p. 31.

— Clusters of brood-bodies apical ; peristome absent ; calyptra cylindrical bell-shaped, reaching down to below the neck of the capsule, plicate and twisted, with longitudinal cracks, persistent ; columella reaching up to the lid ; laminar cells small, roundish, papillose both ventrally and dorsally, cells of the sheath oblong, gradually smaller towards the margins, shortly rectangular to square, further outwards chlorophyllose, a taeniole of longer and much narrower yellowish empty cells often interposed between the marginal and inner cells ; lid cupola-shaped or conical, beak short ; tropical forest mosses.

(236) **Calymperes.**** p. 32.

109. Primary stem short, horizontal, rhizomatoid, secondary stems dendroidly branched, their lower part beset with hypophylls, the whole presenting a pine-like or cycad-like apprearance 110
— Main stem erect or ascending 112
110. Secondary stems ± covered with a felt of brown rhizoids, always orthotropic; branch-leaves ovate-lanceolate, long-acuminate; leaf-cells prosenchymatous, thick-walled, at the concave leaf-cornus polygonal; seta long; capsule large, horizontal to pendent, elongate-ellipsoidal, to cylindric, longitudinally ribbed; lid conical, beak long; on forest ground, rotting tree-trunks, rarely on moist rocks in tropical and subtropical regions.

(438) **Mniodendron.**** p. 56.

— Secondary stems not covered with a felt of rhizoids . . 111
111. Marginal cells in two layers forming a seam; leaf-cells rather thick-walled, pitted, elongate, polygonal or rhombic, at the leaf-corners rectangular and polygonal, forming an alargroup; capsule elongate-ellipsoid to subcylindric, inclined, empty nodoling; tropical ground-moss.

(439) **Mniodendron Korthalsii.** p. 56.

— Marginal cells in a single layer, not forming a seam; leaf-cells rather thin-walled, narrow-prosenchymatous, elongate-rhombic to linear; capsule elongate-ellipsoidal to cylindric, straight or curved, erect to nodding, mostly ribbed; lid cupola-shaped, beak short or long; tropical bark-, rock- and ground-mosses.

(436) **Hypnodendron.**** p. 56.

112. Leaf-cells with scanty chloroplasts and laxly knitted or the chloroplasts, at least those of the lower leaves, resorbed at an early stage 113
— Chloroplasts ± numerous or large, the chloroplasts not resorbed at a later stage 137
113. The apical leaves ± horizontally spreading, forming a conspicuous rosette 114
— Upper leaves not gathered into rosettes, suberect or erecto-patent, either forming a tuft or not tufted . . . 116
114. Base of stem emitting under-ground stolons; lower leaves small scale-like, upper broadly spatulate, ± distinctly

seamed, upwards sharply to spinously biserrate midrib broad, thinning out upwards; leaf-cells rhombic to elongate-hexagonal, basal cells rectangular-oblong; seta long, uncinate; capsule horizontal to pendent, cylindric; exostome and endostome of the same length; lid cupola-shaped, umbilicate; on moist and shady ground, cosmopolitan.

(402) **Rhodobryum.**** p. 53.

— Not stoloniferous; capsule ellipsoid, obovoid, pear-shaped or clavate, sometimes ovoid or subspherical, nodding or pendent (rarely erect) 115

115. Leaf-cells rhombic, subelliptic- or subhexagonal-rhombic or shortly oblong; ground- and rock-mosses, rarely found on tree-trunks in temperate and tropical regions.

(399) *Section* **Rosulata** *of* **Bryum.**** p. 50.

— Leaf-cells elongate-hexagonal or-subrhombic to narrow-linear; ground-and rock-mosses or growing on rotting tree-tunks, cosmopolitan.

(357) *Species of* **Webera.**** p. 47.

116. Leave dimorphic, on sterile shoots disposed in three or four rows, those of the two lateral rows spreading, decurrent, elliptic-oblong or obovate, the dorsal leaves erect and much smaller and narrower; midrib attenuated upwards, ending much below the leaf-tip; leaf-cells thin-walled, laxly knitted, elongate-rhombic or- hexagonal, marginal cells narrow-prosenchymatous, often forming a red seam; seta long, upwards curved; capsule inclined, small, pear-shaped, subhemispherical when empty; peristome double with a basal membrane; lid discoid, apiculate ground-mosses of temperate and tropical regions.

(364) **Epipterygium.**** p. 48.

— The leaves of the different rows similar 117

117. Stem with false and true leaf-traces, pentagonal in cross-section; growing commonly on humus, on dung and on rotting animal and plant remains 118

— Leaf-traces entirely absent; transverse section of stem circular on elliptic 121

118. Capsule with a longer or shorter neck, but without a hypophysis urn prolate- spheroidal to subcylindric or

club-shaped ; peristome-teeth when dry not bent back on to the urn 119

— Capsule with a well-developed hypophysis ; peristome-teeth when dry doubled back on to the urn . . . 120

119. Neck of capsule very short ; leaves lingulate or subspatulate, more rarely sublinear, blunt or rounded at the apex ; calyptra conically hood-shaped ; plants small ; lower leaves rather remote ; midrib ending at some distance below the lead-tip, thin ; capsule prolate-spheroidal to narrow-cylindric ; lid low-cupola-shaped to conical, umbilicate ; tropical.

(334) **Splachnobryum.**** p. 46.

— Neck of capsule ± elongated ; leaves obovate to long-spatulate ; calyptra ventricose-conical, margin lobed ; plants slender ; leaves often remote ; midrib ending at some distance below the leaf-tip or projecting beyond it ; capsule mostly erect, prolate-spheroidal or pear-shaped ; lid conical, acute or blunt, rarely hemispherical ; in temperate and tropical regions.

(336) **Tayloria.**** p. 46.

120. Hypophysis prolate-spheroidal, somewhat thicker than the subcylindrical urn ; leaves lanceolate to obovate, abruptly or gradually and narrowly acuminate ; calyptra small, conically hood-shaped ; stem with false leaf-traces ; growing on the excrements of carnivores and on the dead bodies of small animals, mostly in cold regions or on higher mountains.

(340) **Tetraplodon.**** p. 47.

— Diameter of the hypophysis conspicuously greater than that of the cylindrical or spheroidal urn, in the mature state inflated, obovoid or spherical or ultimately umbrella-like ; leaves broadly obovate, acute or acuminate ; calyptra conical ; in cold and temperate regions.

(342) **Splachnum.** p. 47.

121. Upper leaf-cells not more than three times as long as broad, hexagonal, subhexagonal-rhombic, shortly rhombic or nearly square 122

—Upper leaf-cells more than three times as long as broad, elongate-rhombic to linear, straight or sinuate . . . 129

122. Deuter cells absent, midrib flat; axial column indistinct; leaves linear, blunt, margins recurved; lower leaf-cells rectangular, poor in chloroplasts, smooth, upper leaf-cells quadratic, bearing low and broad papillae both dorsally and ventrally; sporogones on lateral short shoots; capsule obovoid, after the fall of the lid subturbinate; lid low, cupola-shaped, beak long, oblique; calyptra persistent; on dripping wet calcareous rocks in temperate regions.

(244) **Pleuroweisia.** p. 34.

— Deuter cells median or ventral 123
123. Deuter cells median 124
— Deuter cells ventral 127
124. Axial column scarcely or not at all differentiated; leaf-cells transparent and containing only a few chloroplasts; capsule cylindric, neck $\frac{1}{3}$ to $\frac{1}{2}$ the length of the urn; growing on stones and walls in the Tropics.

(269) *Species of* **Hyophila.**** p. 38.

— Axial column $\pm$ distinctly differentiated; capsule pear-shaped, clovate, ellipsoid, ovoid or hemispherical . . 125
125. Plant-mass silvery-grey or reddish; chloroplasts either scanty in all the leaf-cells or very scanty in the lower leaf-cells and entirely absent in the upper cells; seta S-shaped, not twisted; capsule horizontal to nodding, neck of capsule as long as or twice as long as the urn; exostome shorter than the endostome; growing on soil accumulated in cracks and cavities in rocks, or on stony declivities in the northern zone.

(372) **Plagiobryum.** p. 50.

— Plant-mass bright-, dirty-, bluish-, brownish-, yellowish- or whitish-green; neck of capsule scarcely longer than, usually shorter, and often considerably shorter than the urn 126
126. Capsule mostly erect, rarely inclined or horizontal; exostome nearly always longer than the endostome; teeth of exostome whitish or brownish-red; ring of capsule spirally deciduous; midrib projecting beyond the leaf-tip or just reaching up to it or just stopping short of it; mostly tropical and subtropical ground- and tree-mosses.

(365) **Brachymenium.**** p. 49

— Capsule mostly nodding or pendent, rarely horizontal or inclined; exostome and endostome of the same length; teeth of exostome yellow or orange; ring of capsule persistent; ground- and rock-mosses; rarely found on trees or rotting tree-trunks; cosmopolitan.

(374) **Bryum.**** p. 50.

127. Growing on mud; leaves flaccid, moistened with difficulty, obovate, oblanceolate or spatulate; midrib valid, reaching up close to the leaf-tip or projecting beyond it; leaf-cells shortly rectangular-oblong, gradually somewhat longer and wider downwards; seta short or somewhat elongate; capsule immersed or projecting beyond the perichaetium, hemispherical or pear-shaped; peristome absent; lid shallow, cupola-shaped, umbilicate or apiculate; calyptra at first inflated and enveloping the immature capsule, later on cap-shaped, reaching down to the middle of the urn, split up into three and more lobes up to the base of its long beak; tropical, subtropical and temperate regions.

(322) **Physcomitrium.**** p. 45.

— Ground-mosses; leaves either all of them basal or the lower ones scattered and small, the upper much larger, crowded and clustered, erecto-patent, or connivent and their assemblage bud-like, spatulate, lingulate, rarely lanceolate, with or without a seam; leaf-cells laxly knitted, thin-walled, rectangular, subelliptic or rhombic-subhexagonal; seta elongate; lid of capsule subdiscoid, shallowly cupola-shaped or nearly hemispherical, even or umbilicate; lid-cells with a roundish, polygonal, elliptic or oblong lumen, uniformly distributed or spirally arranged; nearly cosmopolitan 128

128. Capsule erect or slightly inclined, polysymmetrically pear-shaped, sometimes subclavate, prolate-spheroidal, hemispheric or cup-shaped; peristome absent or rudimentary; leaves often with a marginal seam; not found in cold regions.

(326) *Subgenus* **Entosthodon of Funaria.**** p. 45.

— Capsule commonly monosymmetrically, more rarely radiately pyriform, inclined, nodding or pendent; peristome double or the endostome rudimentary or absent;

cosmopolitan, found even in higher alpine regions and in the arctic zone.

(329) *Subgenus* **Eufunaria** *of* **Funaria.**** p. 45.

129. Upper leaves lanceolate terminating in a long subulate point, tufted, canaliculata, commonly spreading and sinuous, the lower leaves similar, but much shorter and rather remote; midrib very broad, ventrally flat, with 2-6 or more median deuter cells; leaf-cells very narrow, upwards linear, basal cells elongate-rectangular; stem thin, simple or producing subapical innovations, covered with a felt of brown rhizoids at its base; axial column conspicuous; seta 5—40 mm. in length, sinuous; capsule nodding or pendent; neck narrow-obconic, much thinner than the spheroidal urn; lid arched-conical, ending in a wart; on moist and shady ground, in the cracks of walls, on calcareous debris and on rocks in temperate, plain and mountainous regions.

(373) **Leptobryum.**** p. 50.

— Leaves suborbicular, ovate, obovate, elliptic or lanceolate; midrib comparatively narrow, either not quite reaching up to the leaf-tip or projecting beyond it . . . 130

130. Leaves oblong-elliptic, ovate, obovate or nearly orbicular 131

— Leaves lanceolate, commonly several times as long as broad 133

131. Upper leaf-cells narrowly rhombic to linear, sometimes sinuous; leafy stem and branches ± catkin-like, thin, nearly filiform; leaves oblong-elliptic, ovate or suborbicular, obtuse or acute, rarely mucronate, adpressed both when dry and moist; capsule nodding or pendent; lid hemispherical and apiculate or conical and slightly beaked; ground- and rock-mosses of temperate and tropical regions.

(371) **Anomobryum.**** p. 49.

— Upper leaf-cells rhombic or elongate hexagonal . . 132

132. Capsule erect or slightly inclined, rarely nodding; exostome mostly longer than the endostome; peristome-teeth hyaline, at their base white or brownish-red; leaves ovate, ovate-oblong, elliptic, oblong or spatulate, with or without a marginal rim, short- or long-acuminate; midrib strong or thin, stopping short of the leaf-tip or projecting beyond it; leaf-cells rhombic or elongate-

rhombic or -hexagonal, basal cells rectangular; lid of capsule cupola-shaped and apiculate or conical, rarely with an oblique beak; ground- and tree-mosses mostly of tropical and subtropical regions.

(365) *Species of* **Brachymenium.**** p. 49.

--- Capsule nearly always nodding or pendent, more rarely horizontal, exostome and endostome of the same length; peristome-teeth yellow or orange; leaves broadly ovate, elliptic, ovate-oblong linear-oblong, obovate or spatulate, with or without a rim of narrow-oblong or narrow-linear cells, blunt, acute or short-acuminate or ending in a hair point; leaf-cells polygonal, rhombic or rhombic-subhexagonal, the lower quadratic or rectangular-oblong; seta long, mostly red, upwards uncinate or arcuate; capsule pear-shaped, obovoid-subcylindrical, neck always distinct, lid conical or cupola-shaped, with a terminal wart or apiculate; ground- and rock-mosses, rarely on trees or rotting tree-trunks, cosmopolitan.

(374) *Species of* **Bryum.**** p. 50.

133. Apparently pleurocarpic; stem and branches densely foliose; branches numerous; leaves erecto-patent or imbricate, ovate- or linear-lanceolate, upwards usually serrate; midrib ending below the leaf-tip or slightly projecting beyond it; leaf-cells narrow, elongate-rhombic to linear, basal cells rectnagular or quadratic; capsule erect or decurved, neck long or short, urn ovoid, spherical, short- or long-cylindric, obovoid or oblate-spheroidal; exostome mostly wanting, endostome with 16 small teeth; lid small, depressed-cupola-shaped, ending in a wart; ground- and rock-mosses, mostly on mountains in temperate and tropical regions.

(350) **Mielichhoferia.**** p. 47.

— Strictly acrocarpic 134

134. Upper leaf-cells rhombic or rhombic-subhexagonal; plant-mass dirty brownish- green or reddish, bluish-or whitish-green; stem red, shoots upright; leaves lanceolate to lanceolate-linear, without a seam; midrib usually not reaching up to the leaf-tip; seta long, when dry sinistrorsely twisted; capsule mostly pendent, shortly pear-shaped; exostome and endostome of equal length;

lid large, high-cupola-shaped, blunt or apiculate; ground-mosses; cosmopolitan.

(363) **Mniobryum.**** p. 48.

— Upper leaf-cells linear or narrowly hexagonal or rhombic, 4—10 times as long as broad 135

135. Shoots unformly foliose; plants rigid; leaves when dry adpressed, margins recurved; cells at the leaf-corners square, capsule erect; peristome-teeth connate in pairs except towards their lips and at the middle; lid gently arched; tropical.

(363) **Pseudopohlia.** p. 48.

— Leaves of stem and shoots sensibly increasing in size towards the terminal tuft 136

136. Plant-mass yellowish or brownish-green; lower leaf-cells elongate-hexagonal; capsule erect or inlcined, elongate-obovoid, usually ribbed, when dry ribbed and furrowed; lid obliquely beaked; growing mostly on rotting tree-trunks in the Tropics.

(349) **Orthodontium.**** p. 47.

— Plant-mass bright or yellowish-green, rarely reddish; lower leaf-cells oblong-linear or linear-subhexagonal; capsule inclined to pendent, very rarely erect; lid ending in a wart or short point; ground-or rock-mosses, rarely growing on rotting tree-trunks; cosmopolitan.

(357) **Webera (Pohlia).**** p. 47.

137. Midrib extending beyond the middle of the leaf-blade, often reaching up to the leaf-tips or projecting beyond it, usually strong, sometimes flat or narrow 138

— Midrib short, rarely reaching as high up as the middle of the leaf-blade, often short and either single or double or entirely wanting 195

138. Alar cells and alar area clearly differentiated, or the differentiated cells confined to the leaf-corners 139

— Alar cells and alar area not differentiated, the cells at the leaf-corners not essentially differing from the inner and upper cells, except sometimes the cells at the very leaf-base 153

139. Chlorophyllose cells papillose 140

— Chlorophyllose cells smooth or only here and there with a papilla 141

140. Plants bearing a dense felt of rhizoids ; stem irregularly or subpinnately branched ; leaves symmetrical, lanceolate to lanceolate s ıl ulate, basal part longitudinally plicate, higher up plicate or even ; midrib projecting beyond the leaf-tip in the form of an awn ; leaf-cells mostly with a linear, more rarely rectangular or elliptical lumen, marginal cells of the leaf-base in several rows rectangular ; laminar leaf-cells papillose ; capsule ovoid to subspherical or prolate-spheroidal to elongate-pyriform, inclined to pendent ; on wet rocks, moist ground an in swamps in temperate and tropical regions.

(469) **Breutelia.**** p. 59.

— Plants devoid of a rhizoidal felt ; leaves erecto-patent to unilaterally falcate, lanceolate passing upwards into a ± subulate, canaliculate to subtubular upper part ; midrib thin and narrow, reaching up to or close to the leaf-tip ; leaf-cells roundish or oblong, small, alar cells usually brownish, marginal cells very long and narrow, hyaline, forming a whitish seam ; seta straight, usually short ; capsule erect, prolate-spheroidal to cylindric ; lid conical, ending in a subulate beak ; tropical tree-mosses.

(209) **Leucoloma.**** p. 28.

141. Upper part of the leaves falcate, subulate or narrowly subtubular, *or* the basal part lanceolate and the apical part linear, subtubular or long-acuminate, sometimes ending in a hair-point 142

— Upper part of leaves lanceolate or lanceolate-lingulate, shortly acuminate or acute 151

142. Lower part of leaves broadly ovate or ovate-cordate, passing ± abruptly into the narrow-acuminate and recurved upper part ; alar cells usually yellow ; branches pinnately disposed or clustered ; midrib thin leaf-cells narrow-prosenchymatous, smooth, alar cells small, quadratic ; seta when dry dentrorsely and sinistrorsely twisted ; capsule inclined to horizontal, subcylindric, curved ; on calcareous and marly soils, on walls, rocks or in swamps, sometimes at the base of old tree-trunks in colder and temperate regions.

(335) *Species of* **Campylium.**** p. 91.

— Lower part of leaves oblong or lanceolate, passing ± gradually into the upper falcate, subulate-tubular, or narrow-subulate or long-acuminate upper part, the upper part usually much longer than the lower . . . 143

143. Midrib comparatively narrow or thin 144

— Midrib broad, especially at the basal part of the leaves, commonly rather flat; alar cells mostly red or brown 149

144. Marginal cells nearly square; midrib extending close to the leaf-tip; leaf-cells small, quadratic, further down rectangular or square, brownish; seta straight; capsule prolate-spheroidal to cylindric; beak of lid long and oblique; on non-calcareous rocks and on trees and rotting tree-trunks in temperate regions.

(198) **Dicranoweisia.**** p. 26.

— Marginal cells narrow-oblong or linear; capsule pear-shaped or cylindric 145

145. Leaves rather remote, never densely crowded; midrib not extending beyond two-thirds of the leaf-blade; an inhabitant mostly of temperate regions, growing in water-courses, pools and swamps (prostrate or creeping on wet ground).

(337′) *Aquatic forms of* **Leptodictyum riparium.**** p. 91.

— Leaves crowded; midrib extending to or beyond the leaf-tip 146

146. Marginal cells narrowly oblong, gradually passing into the wider oblong median cells and not forming a well-defined seam; capsule shortly pear-shaped; peristome-teeth broadly lanceolate, sometimes very shortly bifid; plant-mass yellowish or brownish-green, below blackish; stem furcately branched; leaves erecto patent or unilaterally falcate, oblong and ventrally very concave, upwards attenuated into a long subulate point; lid of capsule cupola-shaped, beak long and oblique; on wet non-calcareous rocks and stones in temperate regions.

(170) **Blindia.** p. 21.

— Marginal cells linear with very narrow lumen, forming in several rows a well defined seam passing abruptly into the median elongate-oblong or linear cells; capsule subcylindric, slightly curved; peristome-teeth linear-lanceolate, deeply 2—3-fid; plant-mass pale-, dirty or bright-

green or golden-brown; stem simple or furcately, dichotomously or irregularly branched; leaves mostly one-sided or falcate, lanceolate, terminating in a long, subulate point, canaliculate or subtubular; lid of capsule conical, beak oblique; on forest ground, trees, rotting tree-trunks, sometimes in swamps, in tropical and subtropical regions.

(207) **Dicranoloma.**** p. 27.

147. Leaves oblong passing into a lanceolate upper part ending or not ending in a hair-point; margin of the calyptra conspicuously fringed; capsule prolate-spheroidal; peristome-teeth bipartite; ground-and rock-mosses of tropical and subtropical regions.

(188) **Thysanomitrium.**** p. 24.

— Leaves from a lanceolate lower part attenuated into a long subulate, canaliculate or subtubular apical part; calyptra with a short fringe or not fringed 145

148. Leaves gradually thinning out from the midrib towards the margins; leaf-cells prosenchymatic, at the very leaf-base hyaline; alar cells often inflated, mostly brown or red; seta at first bent in the form of a swan's neck, ultimately erect and sinuous; capsule prolate-spheroidal, deeply furrowed, sometimes of irregular shape; peristome-teeth bifid; growing on dry ground, soil-covered rocks, rotting tree-trunks and peaty ground, cosmopolitan.

(183) **Campylopus.**** p. 23.

— Leaves of uniform thickness; upper leaf-cells quadratic and rectangular, the lower longer; alar group extending to or close to the midrib; seta dextrorsely twisted; capsule erect, cylindric, dry longitudinally furrowed; peristome-teeth divided down to $\frac{1}{2}$ or $\frac{2}{3}$ of their length; lid conical, beak long, often oblique; found on the stems of conifers, on rotting tree-trunks, peaty or sandy forest ground and non-calcareous rocks in temperate regions.

(203) **Orthodicranum.** p. 27.

149. Alar cells passing gradually into the elongate-rhombic or oblong-hexagonal inner and upper cells, nearly square; capsule short-ovoid, rarely cylindrical; ground-, rock- and tree-mosses of temperate regions.

(359′) *Species of* **Brachythecium.**** p. 94

— Alar cell-group sharply delimited; alar cells square or shortly oblong, chlorophyllose cells linear or linear subhexagonal, lumen much narrower than that of the alar cells 150

150. Midrib strong; stem-leaves large, imbricate or erecto-patent, ovate-oblong, ovate or suborbicular; leaf-cells linear-subhexagonal, smooth; alar cells quadratic, rectangular or polygonal, hyaline or tinted; seta long; capsule inclined to horizontal; lid cupola-shaped or conical; swamp and water-mosses of temperate and cold regions.

(347′) *Species of* **Calliergon.** p. 93.

— Midrib thin, terminating before reaching the tubular leaf-tip; leaves broadly lanceolate; leaf-cells narrow-prosenchymatous, alar cells quadratic; capsule erect, cylindric; peristome absent; beak of lid long; tropical.

(212) *Species of* **Braunfelsia.**** p. 29.

151. Alar cells yellow, reddish-yellow or orange; stem dichasially branched; axial column absent; leaves ovate-lanceolate, drawn out into a subtubular point; alar cells square; growing on mountains in the Tropics.

(212) *Species of* **Braunfelsia**** p. 29.

— Alar cells colourless 152

152. The leafy stem appearing inflated and worm-like; chlorophyllose cells very narrowly linear and sinuous; alar cells square or oblong; midrib reaching up to the middle of the leaf-blade (also double and shorter); stem-leaves laxly imbricate, ventrally concave, ovate or ovate-oblong, rounded at the apex, with a short recurved tip; seta 25—45 mm. long; capsule mostly horizontal, ellipsoid; lid elongate-conical; on forest ground in temperate regions.

(395′) **Pseudoscleropodium purum.** p. 100.

— Leafy stem usually flattened, the ventral and dorsal leaves ± laxly inbricate, the lateral ± spreading, all of them ventrally concave, ovate-oblong, acute, or ovate-lanceolate; leaf-cells narrowly linear, smooth, at the very base quadratic and hyaline; capsule erect, straight or slightly curved; lid conical, acute or shortly and obliquely

beaked; on trees and calcareous rocks in temperate and warmer regions.

(388′) *Forms of* **Entodon.**** p. 99.

153. Leaf-cells smooth or nearly so, in one genus the cuticula striate 154
— Leaf-cells papillose or warty 189
154. Upper leaves of the main stem and of any innovations present forming a tuft, the leaves below the tuft usually ± abruptly smaller and either closely set or ± remote from each other. 155
— Terminal leaves not forming a cunspicuous tuft or cluster 159
155. Upper part of the leaves of the tuft subulate, the subulate part as long as, or longer than, the broader part of the leaves 156
— Leaves narrowly or shortly acuminate, the acumen less or much less in length than the broader part of the leaves 157
156. The poorly developed axial column extending throughout the stem; leaf-cells elongate-hexagonal; seta very short, not over-topping the perichaetium; calyptra small, hood-shaped; plant-mass pale-yellowish-green; midrib valid, dorsally convex; deuter-cells median; leaf-cells prosenchymatous; capsule ovoid-cylindric to cylindric; peristome-teeth bipartite, segments upwards often adhering; lid conical, pointed; calyptra bell-shaped; tropical ground-mosses.

(158) **Garckea phascoides.**** p. 19.

— Axial column developed only in the lower part of the stem; leaf-cells rectangular; seta projecting beyond the perichaetium; calyptra small, hood-shaped; a ground-moss of the higher mountains of Java.

(183) **Microcampylopus subnanus.** p. 23.

157. Leaves pruinose, bluish green; axial column conspicuous and sharply delimited; cells of upper leaves elongate-rectangular, of the lower leaves quadratic or shortly rectangular; midrib nearly terete; seta erect; capsule erect, elongate-ovoid to subcylindric; peristome teeth deeply bipartite, segments filiform; lid shortly beaked; in rock-cracks filled with calcareous soil and on shady declivities in temperate regions.

(163) **Saelania.**** p. 20.

— Leaves pale to brownish green 158

158. Axial column conspicuous; upper leaf-cells elongate-hexagonal or rhombic; peristome usually present; stem simple or bearing some stiff, short, catkin like shoots arising from the terminal leaf tuft; leaves broadly ovate or shortly ovate-lanceolate and blunt, or subulate; capsule erect, ovoid to cylindric; lid conical, beak ± elongate; calyptra hood-shaped; ground- and rock-mosses of temperate and subtropical regions.

(179) **Angstroemia.**** p. 22.

— Axial column poorly developed or entirely absent; upper leaf-cells somewhat irregularly rectangular-oblong or rhombic; peristome wanting; leaves elliptic-oblong, upwards lanceolate; midrib strong and broad; capsule erect or slightly inclined, elongate-ovoid; lid conical; on meadows in high mountainous regions.

(179) **Angstroemiopsis.** p. 22.

159. The obliquely long-beaked lid of the capsule ultimately raised by the columella above the rim of the urn and tardily deciduous; stem trigonal in transverse section, without axial column; leaves, when dry incurved or flexuous, not crisp, long-lanceolate, acuminate; seta long, erect; capsule obovoid, when empty pear-shaped; peristome absent; calyptra hood-shaped; on calcareous rocks and rock-debris in temperate, subtropical and tropical regions.

(257) **Hymenostylium.**** p. 36.

— Lid of capsule early deciduous 160

160. Upper leaf-cells elongated, more than about three times as long as broad 161

— Upper leaf-cells short, commonly considerably less than three times as long as broad 168

161. Leaves broadly ovate or ovate-oblong, ± abruptly narrowly or lanceolately acuminate; branches ascending, densely foliose; midrib extending upwards by one-half or four-fifth of the leaf-blade; leaf-cells narrow-prosenchymatic, basal cells shorter, alar cells quadratic; seta long; capsule inclined to horizontal, ellipsoid, rarely erect and prolate-spheroidal; lid conical, beak ± elongate; on forest ground, grassy places on the lower part of tree-trunks and on rocks and stones in temperate regions.

(367′) *Forms of* **Cirrhophyllum.** p. 96.

— Leaves lanceolate or lanceolate subulate 162

162. Growing in swamps, bogs and on soaking-wet meadows; plant-mass yellowish-green or golden or brownish-yellow; stem covered with a thick felt of rhizoids, mostly arising from the leaves; leaves stiffly erecto-patent, deeply plicate, elongate-lanceolate and subulate; midrib thin; leaf-cells narrow-linear, basal cells shorter; seta long, red; capsule inclined to horizontal; lid conical, acute; in cold and temperate regions.

(354') **Tomenthypnum.** p. 94.

— Ground- wall- and rock-mosses 163

163. Leaves consisting mainly of a long awl-shaped upper part forming the continuation of the sheathing base; deuter cells ventral; lead-cells rectangular, lower cells elongate-rhombic, basal cells oblong; seta short, S-shaped, or erect and sinuous; capsule prolate-spheroidal; beak of lid oblique; ground-mosses of tropical regions.

(182) **Campylopodium.**** p. 23.

— Leaves lanceolate, lanceolate-lingulate or lanceolate-subulate 164

164. Plant-mass pale-coloured or bluish-green; leaves flaccid, lanceolate-lingulate to lanceolate-linear, blunt, margin flat; midrib thin; leaf-cells elongate-rhombic or-hexagonal; seta long, erect; capsule short or long-cylindric; peristome-teeth bipartite, segments filiform; lid elongate-conical, beak needle-shaped; calyptra hood-shaped; tropical and subtropical.

(176) **Wilsoniella.**** p. 21.

— Plant-mass yellowish or bright-green 165

165. Peristome-teeth entire, rarely shortly bifid; leaves gradually thinning out from the midrib towards the margin, with or without a marginal rim, keeled, from a lanceolate base narrowed upwards and subulate, margins narrowly recurved; leaf-cells prosenchymatic, rectangular or elongate-hexagonal; perichaetial leaves not differentiated; seta erect, yellowish; capsule shortly ovoid to cylindrical; beak of lid long; tropical ground-mosses.

(181) **Microdus.**** p. 22.

— Peristome-teeth split to the middle or lower down . 166

166. Peristome teeth divided to their base into two linear or filiform segments; leaves not sheathing, subulate, ± canaliculate, adpressed or erecto-patent, sometimes one-sided; deuter cells median; leaf-cells rectangular, ± elongated; seta long, erect; capsule erect or slightly inclined, mostly elongate-ovoid, straight or slightly curved; peristome-teeth yellow, yellowish-red or reddish-brown; lid usually obliquely conical; ground-and rock-mosses of temperate regions.

(161) **Ditrichum.**** p. 20.

— Peristome-teeth divided to the middle 167

167. Leaves of nearly uniform thickness from midrib to margins; leaves elongate-lanceolate or abruptly lanceolate-subulate, squarrose or squarrosely recurved, sheathing or half-sheathing or not sheathing at the base; upper leaf-cells elongate, hexagonal or subrectangular-oblong, about 3 to 4 times as long as broad, cells of the sheath linear; seta red; capsule erect or inclined, prolate-spheroidal or monosymmetrically ovoid or obovoid; peristome-teeth dark-or blood-red, reddish-brown or purple; lid conical, blunt or with a straight or curved beak; mostly on moist sandy or loamy ground in temperate regions.

(177) **Anisothecium.**** p. 21.

— Leaves gradually thinning out from the midrib towards the margin, either with or without a marginal rim, lanceolate-subulate, unilateral or falcate or lanceolate and blunt or acute, or ovate below and linear and blunt upwards; midrib broader at its base; leaf-cells elongate; capsule erect, ovoid or prolate-spheroidal, or inclined, monosymmetric, ellipsoid, with or without a basal crop-like extrusion; ground-mosses of temperate and tropical regions.

(181) **Dicranella.**** p. 22.

168. Aquatic, usually found in flowing water and at the edge of water-falls 169

— Ground-, wall-, rock-and tree-mosses 170

169. Midrib produced beyond the leaf-tip as a terminal spicule; leaves lanceolate, fleshy, with a marginal rim; leaf-cells square or rounded-hexagonal; deuter cells median; seta short; capsule erect, prolate-ovoid or-spheroidal, empty longitudinally plicate; peristome simple or rudimentary,

segments capillary; lid curved-conical; in temperate regions.

(302) **Cinclidotus.**** p. 43.

— Midrib not extending beyond three-fourths of the leaf-blade; leaves broadly ovate to elliptic-oblong, without a marginal rim; leaf-cells longer than broad, prosenchymatic, at the leaf-corners shorter; seta elongate, red; capsule inclined, monosymmetric, ellipsoidal; peristome double; in temperate regions, in the tropics only on mountains.

(346′) **Platyhypnidium.**** p. 93.

170. Stem and branch-leaves anisophyllous, the ventral and dorsal leaves adpressed, the lateral larger and erecto-patent; leaves elliptic, elliptic-oblong or spatulate, tip rounded or drawn out into a short point, marginal cells narrow-linear, forming a seam; calyptra fringed; on tree-trunks, wet rocks and moist ground in tropical and temperate regions.

(227′) *Forms of* **Distichophyllum.**** p. 80.

— Leaves uniform in shape, commonly radiately disposed, more rarely apparently bifarious 171

171. Leaves asymmetric, in four rows, apparently bifarious, obliquely inserted, twisted by 90°, shortly ovate-oblong to lanceolate-lingulate, terminating in a short point; margin of the upper half of the leaf-blade convex, of the lower half concave, the convex part of the margin with a seam of narrow-linear cells; midrib closer to the concave margin, dividing the leaf into two very unequal halves; most of the leaf-cells rounded-hexagonal; capsule erect, prolate-spheroidal; in tropical regions.

(420) **Mniomalia.**** p. 55.

— Midrib dividing the leaf-blade into two equal halves . . 172

172. Leaf-cells not differing markedly from each other either in length and width, the lower scarcely ever more than twice as long as broad 173

— Lower leaf-cells decidedly longer, commonly more than three times as long as broad, or the leaf-cells of the sheathing portion markedly wider 179

173. Plant-mass interwoven by a dense felt of ferruginous rhizoids 174

— Plant-mass more lax, the rhizoids being usually confined to the base of the separate stems, more rarely extending higher up, in no case forming a dense web, closely interlacing the whole plant-mass 177

174. Leaf-blade broadly oblong, rounded or emarginate at the apex, the midrib produced into a simple or subpinnately branched hair-point; urn prolate-spheroidal or-ovoid; peristome very short; lid shallowly cupola-shaped; calyptra hood-shaped, small, fugacious; in tropical mountanous regions.

(405) **Leptostomum.**** p. 53.

— Leaves ovate- or linear- lanceolate 175

175. Lower leaves scattered and much smaller than the upper tufted leaves; midrib extending to the leaf-tip or ending close to it; leaf-cells thick-walled, rounded-hexagonal or transversely oblong, the apical cells longer, basal cells rectangular, seta elongate, often in pairs; capsule cylindric; peristome teeth 4 (3—6); lid conical; calyptra conical, longitudinally plicate, margin lobulate; in moist places, on peaty soil, rotting tree-trunks and non-calcareous rock-faces in temperate regions. (*See also No. 5 of the present key.*)

(345) **Georgia.** p. 47.

— Leaves not essentially differing from each other in size and shape, nearly uniformly disposed 176

176. Rhizoid-felt extending for some distance up the stem; leaves linear-lanceolate, margin entire; seta when moist uncinately recurved, straight when dry; capsule prolate-spheroidal, with 8 longitudinal striæ, furrowed when dry; peristome single, teeth lanceolate; columella strongly developed, extending into the obliquely beaked lid; on rocks and stony declivities in alpine regions.

(196) **Oreas.**** p. 26.

— Rhizoid-felt confined to the lower part of the stem; leaves ovate-below, narrowly lanceolate upwards, margin with two rows of small teeth; seta straight; capsule erect, subspherical, after dehiscence hemispherical; exostome wanting; teeth of endostome filiform, anastomosing; lid high cupola-shaped, beak long, fine and oblique; Indian Archipelago.

(426) **Hymenodontopsis.** p. 55.

177. Leaves without a marginal seam or rim, either quite entire or only scantily serrulate at the tip, channelled, ovate or oblong-lanceolate, never sheathing nor subulate, margins revolute, dry adpressed or flexuous or twisted; upper leaf-cells square or roundish-square, the lower shortly rectangular; seta elongate, erect; capsule mostly inclined to horizontal, prolate-ovoid or -elliptic to ovoid-subcylindric, monosymmetric, striate, mature 4—8- plicate; peristome single, consisting of a cylindric basal membrane and deeply bipartite teeth with filiform segments; lid short-conical; calyptra hood-shaped, reaching down to the middle of the urn; on various substrata, cosmopolitan.

(163) **Ceratodon.**** p. 20.

— Leaves with a marginal seam or thickened rim, or the margin, in most cases, serrulate for the greater part of its lengnth, the serrulations not confined to the leaf-tip; cells mostly similar in size and shape, more rarely the lower slightly longer or increasing in size from the margins towards the midrib 178

178. Seta terminal on the main stem; lateral shoots either erect or erecto-patent, either basal or originating higher up or forming creeping stolons or flagella bending downwards and rooting at their tips; leaves ovate, ovate-oblong, ovate-lanceolate, lingulate, spatulate or linear, often tufted, when dry flexuous or crisp; leaf-cells roundish to hexagonal, rarely rhombic, towards the margins smaller; deuter cells median or absent, a band of stereids in transverse section falcate or horse-shoe-shaped or stereids absent, or deuter cells and stereids replaced by a group of thin-walled cells; midrib reaching up close to the leaf-tip or projecting beyond it; sporogones solitary or several of them together; seta elongate; capsule inclined to pendent, rarely erect, prolate-ovoid or-obovoid, rarely prolate-spheroidal; peristome double, endostome and exostome of the same length, teeth free, endostome with a basal membrane; lid conical or cupola-shaped, blunt or terminating in a wart or short beak; ground, rock-, sometimes tree- or swamp-mosses; cosmopolitan.

(412) **Mnium.**** p. 54.

— Seta basal, or lateral on the lower part of the stem; stolons and flagella not developed; leaves narrow-lanceolate or

linear, rarely ovate, radiately or pinnately disposed; midrib mostly projecting beyond the leaf-tip, dorsally often dentate, with median deuter cells and dorsal as well as ventral bands of stereids; leaf-cells small, thick-walled, rounded-4—6-sided; sporogones usually solitary; seta elongate; capsule inclined, herizontal or nodding, elongate-ovoid or ellipsoidal or cylindric; peristome double, the basal membrane about half the length of the teeth; beak of lid long or short; on trees and on the ground, rarely on rocks, mostly tropical and subtropical.

(427) **Rhizogonium.**** p. 55.

179. Primary stem rhizomatoid, horizontal and short, secondary stems tall (up to 30 cm. in height) simple or pinnately branched, without rhizoids; leaves spreading to squarrose, long- and thin-subulate, sharply serrulate, sheathing at the base, margins with rims consisting or two or several layers of cells; midrib with median deuter cells and a ventral and dorsal band of stereids; upper leaf-cells irregularly trigonal or tetragonal, lower elongate, thick-walled, with a narrow-linear lumen, cells of the sheath thin-walled, linear; seta very short; capsule elongate-ovoid, slightly curved; lid drawn out into an acute, conical, curved beak; calyptra hood-shaped; on trees and rotting wood, Indian Archipelago.

(475) **Spiridens.** p. 59.

— Primary stem upright or ascending from a prostrate base 180

180. Cuticula of leaf-cells marked with small raised striations, cells not truly papillose or warty; inner portion of the plant-mass interwoven by a felt of brownish, papillose rhizoids; stem triangular in cross-section; leaves narrow-lanceolate, falcate, when dry erect and twisted, when moist spreading and recurved, margin revolute; midrib extending up to the leaf-tip, on the whole homogeneous, sometimes with some stereids at its centre; seta 10—15 mm. long, purple; capsule erect or slightly inclined, subspherical, somewhat monosymmetric, when dry strongly furrowed; endostome shorter; lid short-conical; ground-and rock-mosses of temperate and of tropical mountainous regions.

(448) **Plagiopus.**** p. 57.

— Leaf-cells quite smooth 181

181. Sheathing part of the leaves gradually widening out upwards, obovate or obtrapezoidal; axial column poorly developed or obscurely delimited 182

— Leaves lingulate, or lanceolate-linear or -subulate from an oblong or elliptical base; axial column clearly defined, often conspicuous 184

182. Leaf-sheath obovate, passing subabruptly into the sublinear upper part of the leaf; stem *either* from a horizontal felt-covered base ascending or erect, *or* upright throughout; rhizoids arising from the base of the stem and the axils of leaves; midrib extending up to the leaf-tip or slightly beyond it; deuter cells median; cells of the lamina square or roundish, those of the sheath elongate, alar cells large, yellow or brown; seta erect, solitary or paired; capsule erect, ovoid-cylindric; beak of lid long; male plants dwarf, nestling in the rhizoid-felt of the female; on rocks, rock-debris and the bark of trees in tropical and subtropical regions.

(201) **Holomitrium.**** p. 27.

Sheathing part of the leaf obtrapezoidal 183

183. Plant-mass yellow to golden-green, brown beneath; stem valid, up to 8 cm. in height, ascending, with an obscurely delimited axial column, rhizoidal felt red; leaves when dry horizontally spreading to recurved, when moist curved upwards; sheath complete, widened upwards into two wings, the upper part of the leaves subulate and conaliculate; upper leaf-cells rounded-quadratic mixed with triangular and elliptic cells, vaginal cells narrow-linear, alar cells not differentiated; midrib thin, with median deuter cells; capsule erect, ovoid; beak of lid oblique; calyptra hood-shaped; on the bark and branches of trees in tropical and subtropical mountainous regions.

(200) **Symblepharis.**** p. 26.

— Plant-mass green; stem simple or furcately branched, entirely without an axial column, either erect or ascending from a rhizomatoid base; leaves twisted when dry, erecto-patent when moist, upper part lanceolate or lanceolate-lingulate midrib valid, reaching up close to the leaf-tip; upper leaf-cells very small, rounded-quadratic, vaginal cells linear; seta long, solitary or paired;

capsule inclined, elongate-obovoid or cylindric; lid conical, beak long and fine; calyptra hood-shaped; tree-mosses of the Indian Archipelago.

(259) **Rhamphidium.** p. 36.

184. The upper, subcircular or rounded-5-6-sided leaf-cells continued downwards in a broad zone to the leaf-base, the inner lower cells linear, those along the line of insertion of the leaves tinted; leaves elliptic, gradually attenuated upwards into a long, subulate point; midrib thinning out upwards, extending up to the leaf-tip; seta long, upwards twisted; capsule straight, ovoid-cylindric; neck short; endostome wanting; columella projecting beyond the rim of the urn after the fall of the lid; lid elongate-conical, slightly curved; tree-mosses of tropical regions.

(99′) **Bescherellea.** p. 66.

— The upper roundish, quadratic, transversely oblong or± elongate hexagonal or rhombic cells succeeded in a downward direction by rectangular-oblong cells, cells similar along any one horizontal line; neck of capsule narrow or long 185

185. Stem covered with a moderately dense felt of rhizoids; leaves narrowly lanceolate-linear, acuminate, not subulate; seta straight, dentrorsely twisted; capsule erect, ovoid, longitudinally furrowed when dry; peristome-teeth bisect, rarely entire and fenestrate; in cracks of walls and rocks in temperate regions.

(197) **Cynodontium tenellum.** p. 26.

— Rhizoids from the leaf-axils or confined to the base of the stem 186

186. Stem bearing clusters of rhizoids from the leaf-axils; leaves lanceolate-subulate, rarely lingulate; leaf-cells shortly rectangular-oblong rhombic, tetragonal or hexagonal or subquadratic, more elongate at the leaf-base; seta mostly erect; capsule club-shaped, straight or curved, neck long, urn short-cylindric; peristome present or absent, teeth entire or unequally bifid; calyptra hood-shaped, inflated; in temperate regions and on high mountains in the Tropics.

(174) **Trematodon.**** p. 21.

— Rhizoids confined to the base of the stem ; neck of capsule short or absent 187

187. Upper leaf-cells nearly isodiametric, square or rounded-tetragonal, pentagonal or hexagonal 188

— Upper leaf-cells twice to four times as long as broad, vaginal cells rectangular to linear, four to ten times as long as broad ; midrib never ending in a hair-point ; leaves scarcely hygroscopic, *either* elongate-lanceolate or lanceolate-subulate and squarrosely spreading, *or* narrow-lanceolate to subulate and erecto-patent or unilateral ; capsule prolate-spheroidal or monosymmetrically ovoid or obovoid ; lid arched-conical, beak nearly straight or oblique ; peristome-teeth elongate, bifid ; ground-mosses growing mostly in wet places on clayey or sandy-clayey soils in temperate regions and on mountains in the Tropics.

(177) **Anisothecium.**** p. 21.

188. Leaves long-lanceolate or lanceolate-acuminate, on being wetted recurving, then straightening themselves out and finally spreading ; midrib commonly ending in a hair-point and the plant-moss consequently of a greyish-green tint ; leaf-cells small, upwards rounded-square, basal cells, at least the inner ones, rectangular-oblong or linear ; seta very short or somewhat elongate ; capsule spheroidal or ventricose at its base ; peristome rarely absent, peristome-teeth usually 16, red or orange, either broad and flat or longer and narrower, entire or variously split or fenestrate ; calyptra hood or cap-shaped, commonly lobed, crenulate or laciniate ; growing on rocks and rock-debris, cosmopolitan, in the Tropics usually confined to mountainous regions.

(306) **Grimmia.**** p. 43.

— Leaves ovate-oblong, lanceolate, lingulate or spatulate ; midrib ending in a spicule or hair.

(289) *Some species of* **Pottia.** p. 41.

189. Axial column clearly defined, narrow or wide . . . 190

— Axial column poorly developed or entirely absent . . 200

190. Leaves *either* linear- or lanceolate-subulate *or* lanceolate and awned by the midrib projecting beyond the leaf-tip 191

— Leaves oblong, spatulate, or lanceolate or linear, but neither subulate nor awned 192

191. Stems covered by a dense felt of rhizoids, terete; leaves longitudinally plicate, aristate; leaf-cells mostly with a linear, more rarely with a rectangular or elliptical lumen; sporogones terminal on the stem and main branches; capsule from suberect to pendent, when dry furrowed; lid subdisciform, on wet rocks, moist ground, in swamps, in temperate regions, in the Tropics usually only at higher altitudes.

(469) *Species of Section* **Eubreutelia** *of* **Breutelia.**** p. 59.

Stems devoid of a rhizoid-felt, trigonous; leaves not plicate; midrib extending up to the leaf-tip; basal leaf-cells narrowly rectangular, poor in chloroplasts, upper cells quadratic with large chloroplasts, both dorsally and ventrally beset with broad papillæ; sporogones on lateral short shoots; urn obovoid; lid attached to the columella and deciduous together with its upper part; calyptra hood-shaped, reaching down to the middle of the urn; on calcareous rocks and rock-debris and in limestone caves in temperate regions.

(245) **Molendoa.**** p. 34.

192. Swamp-moss; plant-mass 10 cm. and more in thickness, densely inter-woven with a reddish-brown felt of rhizoids leaves ovate-oblong, lanceolate or lanceolate-linear, acute or obtuse; upper leaf-cells minute, roundish, each with an elongate papilla on the ventral and dorsal surfaces; capsule oblique, marked with 8 striæ, mature with 8 furrows; peristome double; lid conical, beak straight or oblique; calyptra hood-shaped, beaked, fugacious; temperate regions.

(441) **Aulacomnium.**** p. 56.

— Ground-, wall- and rock-mosses 193

193. Leaves very hygroscopic (*see No. 188 of this key*).

(306) **Grimmia.**** p. 43.

— Leaves when dry adpressed or incurved, when moist suberect or moderately spreading sometimes slightly recurved, never strikingly hygroscopic 194

194. Margins of the basal part or more or less of the suprabasal part of the leaves consisting of several rows of elongated cells forming a seam 195

— Leaves without a marginal seam 196

195. Plants valid ; leaves at the upper ends of the main shoots tufted, twisted when dry and crisp with their tip involute, when moist recurved and squarrosely spreading, their sheathing part broad, upper part elongate-lanceolate ; midrib valid, reaching up to the leaf-tip or projecting beyond it ; leaf-cells yellowish-green at the median part of the leaf-base and rectangular-oblong, gradually passing into the small, rounded-quadratic, dorsally and ventrally papillose, green upper and inner cells of the leaf-blade, marginal cells sublinear, hyaline ; seta elongate, on lateral short shoots ; capsule erect, ovoid-cylindric, straight or curved ; peristome-teeth 32, filiform ; lid conical ; on dry, sandy-calcareous soil in temperate regions.

(263) *Forms of* **Pleurochaete squarrosa.**** p. 37.

— Small ground-moss ; stem very short ; leaves tufted, obovate, subspatulate or narrowly lingulate, acute or blunt, very flaccid ; midrib narrow, ending below the leaf-tip, deuter cells two (as seen in cross-section), accompanied by companion cells, a dorsal stereid band and large ventral cells ; basal leaf-cells rectangular, upper subhexagonal, scantily papillose, cells of marginal seam yellowish ; seta elongate ; capsule short-cylindric or narrowly ellipsoidal ; peristome consisting of a low basal membrane and very short teeth ; lid beaked ; " India ".

(292) **Hyophilopsis.**** p. 41.

196. Midrib with a dorsal stereid band, deuter cells and companion cells, mostly produced beyond the leaf-tip into a short spine or a hair-point, apex of leaves rarely obtuse ; leaves crowded and tufted, ovate-oblong, lanceolate, lingulate or spatulate ; leaf-margins revolute or flat ; upper leaf-cells rounded-tetragonal or hexagonal ; capsule erect, prolate-spheroidal ; peristome with 16 entire or shortly bifid teeth or rudimentary or absent ; lid conical, beaked ; calyptra hood-shaped ; ground-mosses chiefly of temperate regions.

(289) **Pottia.** p. 41.

— Stereid bands both ventral and dorsal or the midrib homogeneous 197

197. Leaf-margins strongly incurved or involute; leaves lanceolate-linear, apiculate, crisp when dry; leaf-cells very small, rounded-quadratic, both ventrally and dorsally with low papillae; seta short; capsule erect, prolate-spheroidal to cylindric, its narrow mouth closed by a ± persistent membrane (hymenium); lid conical, beak subulate; calyptra hood-shaped, beaked; ground-mosses, also found in cracks in rocks and walls filled with soil; cosmopolitan.

(253) *Species of* **Hymenostomum.**** p. 35.

— Leaf-margins erect, flat, recurved or revolute; hymenium absent 198

198. The different branches ending at about the same level; leaves from a broader base lanceolate; leaf-cells mostly rounded-quadratic; seta erect; capsule prolate-spheroidal to cylindric, mostly straight; peristome-teeth 16; lid conical, beaked; ground and rock-mosses of mostly temperate regions.

(271) *Species of* **Didymodon.**** p. 38.

— The branches of the furcately divided stem usually not ending at the same level 199

199. Upper leaves much larger, forming a conspicuous tuft; leaf-cells quadratic, both dorsally and ventrally papillose, basal cells longer; seta elongate; capsule erect or slightly inclined, cylindric; peristome-teeth 2-or 3-partite, orange or purple, segments filiform, unequal; lid conical beaked; on walls and calcareous ground and on rocks in temperate regions.

(260) **Trichostomum** *sensu stricto.* p. 36.

— Upper leaves not forming a conspicuous tuft; leaf-cells very small, roundish, both ventrally and dorsally papillose, basal cells somewhat wider, quadratic to rectangular, yellowish; seta elongate; capsule erect or slightly inclined; peristome rarely wanting or rudimentary, mostly with 32 filiform, sinistrorsely twisted segments; lid conically beaked; cosmopolitan ground and rock-mosses.

(277) **Barbula.**** p. 39.

200. Stem trigonal, in cross-section triangular; leaves oblong to lanceolate; columella attached to the lid, when

mature carrying the lid upwards, when moistened again closing the mouth of the urn, lid ultimately deciduous, carrying the upper part of the columella away with it; seta elongate; capsule obovoid, when empty pear-shaped; lid conical, beak subulate, long and oblique; calyptra hood-shaped, covering half the urn; on calcareous rocks in temperate regions.

(257) **Hymenostylium.**** p. 36.

— Stem terete or nearly so, in cross-section cirular or circular-subtriangular; lid of capsule early deciduous . . 201

201. Midrib homogeneous, weak; minute rock-mosses forming extensive thin cushions; leaves linear, recurved, when dry adpressed, not crisp; leaf-cells small, quadratic, lower cells longer, papillae scanty; seta elongate; capsule cylindric, straight or slightly curved; peristome-teeth linear-lanceolate, rudimentary or absent; lid conical, with or without a beak; mostly on calcareous rocks in temperate and tropical regions.

(256) **Gyroweisia.** p. 36.

— Midrib with deuter cells and mostly also with one or two bands of stereids 202

202. Axial column poorly developed; deuter cells 2—6, median, stereid bands 1 or 2, rarely absent; midrib and leaf-cells both ventrally and dorsally densely papillose; leaf-cells rounded-quadratic, small, basal cells rectangular and yellowish; seta elongate; capsule erect, prolate-spheroidal; peristome wanting; lid conical, beaked; calyptra hood-shaped, covering half the urn.

(255) **Gymnostomum.**** p. 36.

— Axial column entirely absent, deuter cells ventral associated with a dorsal band of stereids; all or at least the upper leaf-cells papillose, leaf-cells roundish or 4-to 6-sided; seta elongate; capsule prolate-spheroidal or ovoid-subcylindric, mostly striate or furrowed; peristome double, single or absent; lid cupola-shaped, mostly ending in a long beak; calyptra hood-shaped, small, caducous; mostly tree-mosses, sometimes found on rocks of mostly tropical regions.

(11') **Zygodon.**** p. 60.

203. Primary branches disposed in a dendroid at the upper end of the longer or shorter stem; midrib double . 204
— Stem simple or irregularly or pinnately branched . 205
204. Leaves acutely serrulate all along their margins, ovate, acuminate; leaf-cells elongate-prosenchymatous, pellucid; plants pale-green, later on pale-brown; temperate Himalaya.

(484′) **Stenothecicopsis serrula.**** p. 115.

— Leaves serrulate only at the upper part of the margins, suborbicular-ovate, ending in a hair-point; leaf-cells narrow-linear; plants yellowish, at their lower part brownish; seta long; capsule horizontal to pendent, ellipsoidal; lid conical, beaked; subtropical regions.

(483′) **Macrothamniella.**** p. 115.

205. Stems intrically interwoven; leaves broadly ovate, shortly and sharply acuminate; branches of the higher orders catkin-like; leaf-cells narrow-linear, those of the alar group square, chlorophyllose; capsule erect, cylindric; peristome double; beak of lid short; tropical tree-mosses.

(446′) **Bryosedgwickia.**** p. 109.

— Stems not interwoven, rhizoids in scattered clusters or scanty or absent 206
206. Stems with their branches and leaves strikingly resembling ostrich feathers, disposed in rows, 5—20 cm. in height, densely foliose, paraphyllia numerous; branches horizontally spreading, upwards falcate; leaves falcate to helicoid, plicate; leaf-cells narrow-prosenchymatic; seta 4—5 cm. long, sinuous; capsule curved-cylindric; lid cupola-shaped, ending in a wart; on forest ground, sometimes transgressing on to erratic blocks or the lower part of tree-trunks in temperate regions.

(469′) **Ptilium.**** p. 115.

— Plants not resembling ostrich feathers . . . 207
207. Leaf-cells isodiametric or nearly so length : breadth =1—1·4 : 1, small, thick-walled, basal cells quadratic or shortly rectangular, smooth or the cell-corners papillarly protruding, rarely dorsally protruding in the form of elongated mamillæ; stem erect or ascending emitting

small-leaved stolons and at intervals clusters of rhizoids, furcately or irregularly branched or the branches in terminal clusters; seta 1—2 cm. long; capsule erect, prolate-spheroidal; endostome and exostome of the same length; lid cupola-shaped, blunt or umbilicate; on humus collected on rocks and in rock-clefts especially in limestone regions in temperate climates.

(280') **Myurella.**** p. 84.

— Inner and upper leaf-cells more than 1·5 times as long as broad 208

208. Leaves from a broadly ovate ovate-cordate or elliptical-oblong lower part gradually or more frequently abruptly contracted into an elongate, usually canaliculate, subulate mostly squarrosely recurved apical part . . . 209

— Leaves ovate, ovate-oblong, lanceolate or lanceolate-subulate, symmetrical or unilaterally falcate . . 210

209. Transverse section of stem circular, stem without a peripheral cortical layer; leaves radiately disposed, basal part broadly ovate or ovate-cordate, gradually or abruptly attenuated into a long channelled or canaliculate-subtubular, subulate apical part; leaf-cells narrowly prosenchymatic-linear, smooth, alar cells small, quadratic or hexagonal, yellowish-green to golden yellow; seta elongate, dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, subcylindric curved; peristome double; lid arched-conical, terminated by a wart or ending in a point; on dry ground, tree-roots, rotting tree-trunks, on calcareous and slaty rocks, on soaking-wet meadows, at the edge of water courses, in swamps and peat-bogs in temperate and colder regions.

(335') **Campylium.**** p. 91.

— Transverse section of stem elliptical, the stem with a brownish-red rind covered with a peripheral layer, one or two cells thick, of hyaline cells; upper ends of stem and branches curved; stem-leaves apparently bifarious, lower part broadly elliptic-oblong, apical part one-sidedly uncinate; leaf-cells along the median zone 10—15 times as long as broad, narrower towards the margin, apical cells shorter, basal cells yellow, alar cells small or inflated, usually hyaline, forming a well-defined alar group; seta 3—4 cm. long, purple, sinuous; capsule ±

horizontal, elongate-ovoid, curved, neck long; peristome double; lid arched-conical, pointed; in damp and wet places in temperate regions.

(455′) **Breidleria arcuata.** p. 110.

210. Hygrophytic 211
— Mesophytic or xerophytic 212
211. Stem and branches densely foliose, like swollen, the ends of the branches thickened and curved; cross-section of stem rounded-pentagonal; axial column absent; leaves imbricate, ovate-oblong, ventrally very concave; leaf-cells thick-walled, about 10—15 times as long as broad, basal cells shorter, rectangular; alar cells elliptical, thick-walled, reddish-brown; seta 4—6 cm. long, sinuous, purple; capsule inclined to horizontal, cylindric, when dry furrowed, neck upright; peristome double; lid conical mostly blunt; in swamps and ditches of temperate and colder regions.

(349′) **Scorpidium scorpioides.** p. 93.

— Stem and branches somewhat remotely foliose, slender; cross-section of stem circular or three to five-sided; axial column absent; leaves decurrent, broadly ovate-lanceolate, erecto-patent, keeled and conduplicate; leaf-cells elongate-rhombic-subhexagonal, 6—15 times as long as broad; seta rudimentary; capsule immersed, ovoid or prolate-spheroidal; peristome double, teeth (16) of the exostome very hygroscopic, teeth of endostome (16) filiform, connivent into a cone; calyptra small, conical; in stagnant and flowing water in temperate regions.

(57′) **Fontinalis antipyretica.** p. 65.

212. Leaf-cells with papillae over the lumen 213
— Leaf-cells *either* entirely smooth *or* the cell-corners papillarly protruding, sometimes cells here and there with a minute papilla over the lumen 215
213. Papillae ending in two or more points; stem not stoloniferous, irregularly branched; leaves ventrally concave, ovate-oblong, contracted into a denticulate or ciliate, papillose point, margin revolute; upper cells elongate, lower inner cells longer, the median basal cells linear and yellowish-brown, marginal and outer basal cells quadratic or square; seta less than 1 mm. long; capsule

immersed, obovoid to subspherical, smooth; lid shallowly cupola-shaped; on rocks, stones and roofs in temperate regions.

(67′) **Hedwigia.**** p. 65.

— Papillae drawn out into a single point or roundish; stems stoloniferous 214

214. Leaves feebly longitudinally plicate, ovate-oblong, sublanceolate, very shortly acuminate, margins strongly revolute; cells of the leaf-tip elongate-subelliptic, gradually shorter downwards, marginal and intramarginal cells quadratic, nearly square; median basal cells linear and brown; inner cell-walls fairly even, upwards thicker; capsule over-topped by the upper leaves, prolate-spheroidal, furrowed, neck thick; peristome absent; lid cupola-shaped ending in an oblique conical point; calyptra hood-shaped or 2—3 lobed, rock-mosses of tropical mountainous and temperate regions.

(69′) **Hedwigidium.**** p. 65.

— Leaves delicately, but clearly longitudinally furrowed, broadly ovate or ovate-oblong or oblong-elliptic, rarely ovate-lanceolate, attenuated into a short acumen or ending in a hair-point; cells of the leaf-tip irregularly elongate-elliptic, lower cells shortly rectangular or quadratic. median basal cells linear and brown, cells at the leaf-corners quadratic; inner surface of the cell-walls corrugated or undulate (*see also No. 26 of the present key*); seta from 1—7 cm. in length, when dry twisted; capsule erect or slightly inclined, prolate-spheroidal to cylindric; calyptra hood-shaped, covering about two-thirds of the urn; peristome absent (rarely with 16 lanceolate-teeth), rock-mosses, rarely on trees in tropical and subtropical regions.

(70′) *Section* **Eubraunia** *of* **Braunia.**** p. 65.

215. Upper leaves of all or some of the shoots closely wrapped up so as to form a pungent point, the subapical leaves erect or squarrosely spreading, channelled or subtubular, from a subauriculate, subcordate base elliptic, oblong or lanceolate acuminate or subulate; main stem creeping, but commonly destroyed at an early stage, the secondary stems then like main stems, erect or ascending,

simple or pinnately branched; seta elongate; capsule suberect to inclined, ovoid to cylindric, short necked; peristome double; lid conical, beak needle-shaped; on the trunk and branches of trees, more rarely on rocks or on forest ground in tropical and subtropical regions.

(435′) *Section* **Euacroporium** *of* **Acroporium.**** p. 105.

— Upper ends of shoots not pungent 216

216. Leaves from a narrow base elliptic-lanceolate, upwards drawn out into a subtubular point; perichaetial leaves forming a hollow cylinder ending in a subulate point; capsule erect, cylindric; peristome absent; beak long; tropical tree- and ground-moss.

(212) **Braunfelsia enervis.** p. 29.

— Upper part of the leaves not subtubular; peristome double 217

217. Leaves unilaterally falcate, the dorsal, ventral and lateral leaves commonly differentiated in outline obliquely ovate or cordate-lanceolate; alar cells parenchymatic, inflated or no; capsule inclined to horizontal, prolate-spheroidal to cylindric; on various substrata, chiefly in temperate regions.

(452′) *Forms of* **Hypnum.**** p. 109.

— Leaves symmetrical or somewhat unilateral, not falcate . 218

218. Leaves dimorphic, the dorsal and ventral leaves ± adpressed, the lateral ones spreading bifarious . . 219

— Leaves similar, radiately disposed 220

219. Alar cells quadratic, hyaline, forming a clearly delimited alar group; dorsal and ventral leaves laxly imbricate, the lateral ones spreading, elliptic or ovate to ovate-lanceolate; branches bifarious irregularly or densely pinnately disposed, mostly short, blunt or acute; leaf-cells narrow-linear; seta 1—3 cm. long; capsule erect, straight or slightly curved; lid conical, acute or shortly and obliquely beaked; mostly on tree-trunks and calcareous rocks in temperate, subtropical and tropical regions.

(388′) *Forms of* **Entodon.**** p. 99.

— Alar cells not differentiated; leaves ovate or oblong-lanceolate, sometimes subulate or ending in a hair-point, wings inflexed alternately on the right and left sides;

leaf-cells narrow-prosenchymatic, smooth or at their upper end papillarly protruding, basal cells shorter and more thick-walled; seta elongate; capsule suberect to horizontal, ovoid to cylindric, radially or bilaterally symmetric; lid cupola-shaped, with or without a beak; often on rotting tree-trunks, more rarely on rocks, stones, walls or humous soil.

(460′) *Forms of* **Isopterygium.**** p. 112.

220. Alar cells not inflated, thick-walled 221
— Alar cells inflated 222

221. Alar cells hyaline, quadratic, alar area sharply delimited, scarcely decurrent; plant-mass bright- to yellowish-green or golden-brown; branches irregularly to pinnately disposed, blunt or acute; leaves ovate, ovate-oblong or ovate-lanceolate, obtuse or apiculate; leaf-cells narrow-linear; capsule erect, straight or slightly curved; lid conical; on tree-trunks and calcareous rocks in temperate and warmer regions.

(388′) *Forms of* **Entodon.**** p. 99.

— Alar cells yellow or orange-red, quadratic or short-rectangular; alar area decurrent; plant-mass dark to pale-green or straw-coloured; branches nearly regularly pinnately and subbifariously disposed, either attenuated upwards or blunt; leaves closely imbricate, cochleariform, ± distinctly longitudinally plicate, broadly ovate or ovate-oblong, rounded at the apex or ending in a blunt and recurved point; seta 1—4 cm. long sinuous; capsule inclined to horizontal, ellipsoid to cylindric; lid arched-conical, acute or blunt; on dry ground in cold and temperate regions.

(395′) **Pleurozium.**** p. 100.

222. Plant-mass rather lax, green to straw-yellow, plants entirely without rhizoids; stem densely foliose, apparently swollen and vermiform; stem-leaves laxly imbricate, cochleariform, shallowly and broadly plicate, somewhat decurrent, broadly ovate or ovate-oblong, rounded at the apex and ending in a small recurved point; leaf-cells narrow-linear, sinuous; alar cells quadratic or shortly rectangular, pale-coloured; seta 25—45 mm. long, red, sinuous, twisted; capsule mostly horizontal,

ellipsoidal; exostome orange, endostome yellow; lid elongate-conical; on forest ground in temperate regions.

(394′) **Pseudoscleropodium.** p. 100.

— Plant-mass green variegated with purple; stems slender, ascending, with scanty rhizoids; branches clustered, rather blunt, ± ramified; leaves erecto-patent, ventrally concave, from a narrow base elliptic, acute or subobtuse; leaf-cells linear, alar cells elongate-hexagonal to subrectangular, brownish-yellow; seta about 1 cm. long, very thin, twisted; capsule very small, inclined ovoid, exostome-teeth lanceolate, yellow, endostome hyaline, basal membrane produced; beak of lid short; a Sikkim species.

(407′) **Hageniella sikkimensis.**** p. 101.

223. Secondary stems creeping or hanging down from the branches of trees, rarely from rocks, often forming festoons, rarely only prostrate on the branches and twigs of forest trees 224

— Secondary stems or primary branches erect or ascending, sometimes prostrate, but neither creeping nor pendent 251

224. Leaves trimorphic, hypophylls subtriangular, squarrose, upper stem-leaves and the branch-leaves ovate or ovate-oblong and acuminate, leaves of the pinnae much smaller, ovate-lanceolate or triangular-oblong, acuminate or subulate; in the rain-forests of Java.

(210) *Forms of* **Isothecium trichocladon.** p. 79.

— Leaves dimorphic or monomorphic 225

225. Main rib accompanied by two short accessory ribs, the main rib ending close to the leaf-tip; leaves ovate-cordate and acuminate, or ovate-lanceolate; leaf-cells rhombic-sublinear, at the apex and along a median zone in straight rows, at the basal part of the leaves elliptic or rounded-hexagonal in oblique rows; seta straight or curved; capsule erect to horizontal, prolate-spheroidal to cylindric; peristome double; lid conical, beaked; calyptra hood-shaped, reaching down to the middle of the urn; on trees and shaded rocks and stones in temperate regions.

(96′) *Forms of* **Antitrichia curtipendula.** p. 66.

— Midrib single, double or wanting 226

226. Apical leaves of stem and shoots closely wrapped up into a pungent point, lower leaves erect-petent or subsquarrosely spreading, canaliculate or subtubular, at the base subauriculate and subcordate; cells narrow-prosenchymatic, lumen very narrow, usually smooth, rarely minutely papillose, alar cells large, oblong, inflated; seta elongate; capsule suberrect to inclined; peristome double; lid conical, beak needle-shaped; on the branches of trees in the Tropics and Subtropics.

(435′) *Forms of* **Acroporium.**** p. 105.

— Apical leaves ± spreading 227

227. Leaves in outline suborbicular, broadly ovate, oblong or spatulate, either blunt or subtruncate, or acute or ± abruptly contracted into a short point, rarely abruptly lanceolate; ratio of length to greatest width rather less than two to one down to one to one, more rarely the length slightly exceeding twice the breadth . . 228

— Leaves ovate-lanceolate, gradually or subabruptly narrowed upwards, often conspicuously contracted into a very narrow acumen or a hair-point, ratio of length to breadth varying between 1·5 : 1 to 3 : 1 . . . 236

228. Stem-leaves suborbicular; alar area circular, small, ventrally concave; leaf-cells linear oblong or elongate-rhombic, the transverse walls papillarly protruding, otherwise smooth; seta 5—10 mm. long, yellow; capsule erect, spheroidal, becoming spherical after dehiscence; peristome double, teeth short; lid conical, beaked; epiphytic in the subtropical regions of the Himalaya.

(129′) **Penzigiella.**** p. 69.

— Stem-leaves ovate, elliptic, or ovate or elliptic oblong or broadly spatulate, length to breadth mostly as 1·5 to 2 : 1, more rarely two to three times as long as broad 229

229. Leaves uniformly disposed all round the stem . . . 230

— Lateral leave ± spreading, dorsal and ventral leaves either adpressed or wanting 234

230. Secondary stems and branches laxly foliose; leaves spreading, longitudinally plaited, elliptic oblong and drawn out into a very narrow and comparatively short, twisted point; midrib double or wanting; cells linear or elongate rhombic, smooth (stems usually ascending); Tropics and Subtropics.

(131′) *Forms of* **Endotrichella.**** p. 69.

— Secondary stems and branches closely foliose, usually lycopodioid or tamariscoid 231

231. Leaf-cells very small, rhombic or rounded-tetragonal to-hexagonal, the upper cells with a small papilla over the lumen; leaves not auriculate, usually biplicate, very rarely transversely undulate; secondary stems pendent or more commonly at right angles to the substratum; Tropics and Subtropics.

(195′) *Species of* **Pinnatella.**** p. 78.

— Leaf-cells about 4—8 times as long as broad, elongate-rhombic to narrow-linear, smooth or papillose . 232

232. Leaf-cells densely and finely papillose, at the leaf-corners in several rows quadratic, chlorophyllose, of the decurrent base brownish-yellow and without chloroplasts; secondary stems (or main branches) very long, always pendent, sinuous; branches bi or tripinnate; leaves not auriculate; stem-leaves remote, one-sided, concave, longitudinally plicate, decurrent; branch-leaves closely spaced, broadly spatulate or ovate-oblong, abruptly pointed, with a ± complete intralaminal seam; seta very short; capsule erect spherical, the mouth after the fall of the lid narrow-circular; endostome wanting; on trees, from Kumaon to Bhotan and from Assam to Sechwan and Siam.

(73′) **Cleistostoma ambigua.**** p. 65.

Leaf-cells smooth 233

[233. Secondary stems regularly or slightly irregularly pinnate, pendent or prostrate, stiff; branches somewhat flattened, simple or with remotely spaced branchlets; leaves auricled, near the base transversely wavy, mostly ovate-oblong or ovate-lingulate, shortly pointed, without an intramarginal seam; leaf-cells linear, at the apex of the leaves narrow-rhombic, basal cells brownish, cell of the leaf-corners not differentiated; seta very short; urn urceolate, orifice rather wide; peristome double; on trees and stones in tropical and subtropical regions.

(181′) **Calyptothecium.** p. 75.

Secondary stems irregularly or dendroidly branched, rarely simple; branched terete, short and blunt or filiform; leaves not auricled, elliptic or ovate-elliptic,

usually ending in a short and narrow point, rarely abruptly subulate; leaf-cells rhombic to narrow linear, basal cells shorter, brownish, at the leaf-corners usually subquadratic, rarely scarcely differentiated; seta ± elongate; capsule prolate-spheroidal; endostome rudimentary or wanting; lid conical, beak short or very short; tropical and subtropical tree-mosses.

(140′) **Pterobryopsis.**** p. 70.

234. Leaves in 4 rows, the dorsal and ventral wanting, the lateral spreading lingulate, usually transversely wavy, apex rounded or truncate, rarely apiculate; midrib not extending up to the leaf-tip; capsule mostly immersed, prolate-spheroidal or-ovoid; lid conical, beak short; mostly epiphytic, sometimes on rocks or rock-debris in the Tropics and Subtropics.

(186′) **Neckeropsis.**** p. 75.

— Leaves in 8 rows, dorsal and ventral adpressed, the lateral spreading 235

235. Leaves broadly ovate-oblong, short acuminate or truncate, or lingulate, oblong or linear, base rounded or gently concavely incurved; apical leaf-cells rhombic or elongate rhombic, lower cells linear, alar cells small and quadratic; capsule immersed or raised, prolate-spheroidal; peristome double; lid conical, ending in a beak; tree- and rock-mosses of temperate and tropical regions.

(184′) *Species of* **Neckera.**** p. 75.

— Stem-leaves oblong-elliptic, rounded at the apex, with a cusp on either side of the base; secondary stems very long, bent to and fro, pendent, irregularly pinnate or bipinnate; branchlets short, blunt, densely foliose, dry helicoidally coiled up; midrib ending remote from the leaf-tip; leaf-cells small, round or elliptic, the median basal cells oblong, cells at the leaf-corners quadratic: capsule immersed, prolate-spheroidal; peristome double; lid conical, beak oblique; calyptra hood-shaped, beset with long, erect hairs; tree-mosses of temperate regions.

(181′) **Cryptoleptodon.**** p. 74.

236. Length of the stem-leaves less than twice their breadth, ratio of length to breadth equal to 1·5-nearly 2 : 1 . 236

— Total length at least of the larger stem-leaves and of the branch-leaves twice to three times their breadth.

237. Leaf-cells elongate-rhombic, lumen narrow-elliptic with a papilla over the centre; secondary stems usually rather remotely spaced, irregularly branched; leaves cordate, ovate-oblong, abruptly subulate or ending in a hair-point, rarely short-acuminate, ventrally very concave, dry mostly longitudinally plicate; midrib narrow, not reaching up close to the leaf-tip; seta short and straight; capsule prolate-spheroidal; peristome double; lid conical, beak oblique; calyptra hood-shaped, hairy: tropical and subtropical tree-mosses.

(164′) **Meteorium.**** p. 71.

— Leaf-cells linear, smooth, rarely some of them with a papilla; secondary stems irregularly pinnately branched 238

238. Midrib double, short; leaves auricled, ovate rapidly passing into a short or subulate acumen, recurved; leaf-cells narrow-linear, smooth, alar cells not differentiated; on the stems and branches of trees in Sikkim.

(171′) **Meteoriella soluta.**** p. 74.

— Midrib simple, extending upwards to the middle or nearly to the tip of the leaf-blade; leaves not auricled. 239

239. Leaves stem-clasping, squarrose, often recurved, basal part broadly subreniform, upwards drawn out into a lanceolate, short or long apical part; secondary stems numerous; leaf-cells narrow-linear, mostly smooth, at the leaf-corners not differentiated; seta short; capsule prolate-spheroidal, truncate; peristome double; lid shallow, ending in a stout, conical, ± curved beak, calyptra cap-shaped, lobulate and hairy or hood-shaped and glabrous, tree-mosses of tropical and sub-tropical regions.

(172′) **Meteoriopsis.**** p. 74.

— Leaves half-stem clasping ovate-oblong, squarrose, the very narrow subulate tip twisted; branches irregularly disposed, very long and pendent, irregularly pinnately ramified, densely foliose, appearing intumescent like the branchlets; midrib thin, reaching up to about the middle of the leaf-blade; leaf-cells linear, smooth, not differentiated at the leaf-corners; seta 5—7 mm. long, curved or sinuous; capsule erect to pendent, monosym-

metric, straight or curved, urn ovoid, urceolate or ellipsoid; peristome double; lid conical, beak oblique; tree-moss of tropical and subtropical regions.

(173′) **Aërobryum speciosum.**** p. 74.

240. Ribs two, short; branches bi or tripinnately disposed; leaf-cells narrow-linear, smooth or papillose; seta 1—3 cm. long, purple, upwards rough; capsule erect, prolate-spheroidal, spinulose; lid conical, beak straight; calyptra hood-shaped, glabrous; on the branches of trees and shrubs in tropical and subtropical regions.

267′) *Species of* **Symphyodon.**** p. 83.

— Midrib single or absent or only faintly indicated, sometimes with one or two additional very short ribs . 241

241. Leaf-cells with several papillae placed over their inner lateral walls, elongate-rhombic; secondary stems numerous, somewhat remotely spaced, usually very long and hanging down, irregularly pinnately branched; leave sovate-oblong, auriculate or cordate at their base, short or long-acuminate; seta 5 mm. long and less; capsule prolate-spheroidal; peristome double; lid conical, beak straight or oblique; calyptra hood-shaped or conically cap-shaped; tree-mosses of tropical and subtropical regions.

(161′) **Papillaria.**** p. 71.

— Leaf-cells smooth or pitted or with a single papilla over their lumen, either on one or both the ventral and dorsal surfaces, sometimes, in addition, over their end-corners 242

242. Alar cells or the cells at the leaf-corners clearly differentiated 243

— Alar cells obscure or not at all differentiated . . . 247

244. Leaf-cells smooth; midrib wanting; secondary stems 10—20 cm. long, towards their outer ends filiform; leaves broadly elliptic or oblong, rounded at the apex and ending in a subulate or capillary point, margins upwards broadly incurved; leaf-cells linear, near the upper end of the blade elongate-rhombic, alar cells rounded-quadratic, brownish or reddish; seta 15—25 mm. long; capsule erect, ovoid; peristome double; lid short-conical, beak long and oblique; calyptra hood-shaped; a Javanese tree-moss.

(123′) **Myurium rufescens,** *forma* **pendula.** p. 68.

— Leaf-cells with one or several papillae 245

245. Stems often creeping for long distances (frequently for more than one meter) along the branches of forest trees; leaf-cells subrhombic-linear; papillae often in several rows over the lumen of the cells; branches *either* short and erect or spreading, *or* longer and pendent; leaves of branches and pinnae nearly horizontal, often bifarious, narrow-lanceolate, finely or subulately acuminate; midrib thin. basal leaf-cells smooth, alar cells subquadratic; seta 2—4 mm. long or less; erect and prolate-spheroidal or inclined and somewhat irregular; peristome double; lid conical; beak short and oblique; calyptra hood-shaped, rarely cap-shaped, glabrous or sparsely hairy; on the bark of trees, on branches and leaves, more rarely on dead twigs or on humous ground.

(169′) **Floribundaria.**** p. 73.

— Secondary stems always pendent 246

246. Leaves cordate ovate, subabruptly attenuated into a subulate, twisted acumen, serrulate, even, ventrally somewhat concave; leaf-cells linear, prosenchymatic, with a small papilla over the lumen, alar cells much wider, subquadrate; midrib extending to about the middle of the leaf-blade; seta about 3 mm. long; capsule erect, cylindric; a tree-moss of the Sikkim Himalaya.

(130′) **Osterwaldiella monosticta.**** p. 69.

— Leaves cordate-ovate, gradually narrowed into a long-acuminate apical part, sometimes ending in a hair-point, denticulate along the margins, flexuous, undulate, often ± longitudinally plicate, squarrosely spreading; leaf-cells rhombic, ± elongate, with one or two papillae over the lumen, the cell-corners papillarly protruding, alar cells ± differentiated; seta 6 mm. long or shorter, rarely longer; capsule erect, prolate-spheroidal, immersed or slightly protruding; lid conical beak oblique; tree-mosses of the Sikkim Himalaya.

(171′) *Section* **Chrysosquarridium** *of* **Chrysocladium.** p. 74.

247. Upper or most of the leaf-cells linear or subrectangular oblong, smooth or with one papilla over the lumen either on one surface only or both dorsally and ventrally 248

— Leaf-cells elongate-rhombic or narrowly or somewhat wider elliptic 249

248. Leaf-cells always with a papilla over their lumen; midrib considerably exceeding the middle of the leaf-blade; calyptra hood-shaped, upwards hairy; leaves ovate-oblong or lanceolate, narrowly pointed or ending in a hair-point; seta 12—20 mm. long, sinuous; capsule erect or suberect, prolate-spheroidal; lid conical, beak oblique; tree-mosses of tropical and subtropical regions.

(166′) **Aërobryidium**** p. 72.

— Leaf-cells smooth or papillae scanty; midrib rarely passing upwards beyond the middle of the leaf-blade, sometimes entirely absent; calyptra usually cap-shaped, long- and narrow-acuminate, margin lobulate; seta mostly short; capsule erect or inclined, prolate-spheroidal truncate, or ellipsoidal; lid conical, beak straight or oblique; calyptra hairy or glabrous; tree-mosses of tropical and subtropical regions.

(167′) **Barbella.**** p. 72.

249. Leaves drawn out gradually into a proportionately broad acumen narrowing into an acute point; secondary stems very long and pendent, irregularly and rather distantly pinnately branched; leaves half-stem-clasping, when moist spreading; leaf-cells with an elongate-elliptic lumen, smooth, basal cells near the midrib linear at the leaf-corners small, quadratic or transversely oblong; midrib reaching up close to the leaf-tip; capsule immersed, prolate-spheroidal; tree-mosses of tropical and subtropical regions.

(84′) **Pilotrichopsis.**** p. 66.

— Leaves drawn out ± abruptly into a long and very narrow acumen; leaf-cells nearly always beset with one, more rarely two papillae 250

250. Secondary stems laxly foliose; midrid nearly always passing beyond the middle of the leaf-blade; lid of capsule conical, beak long and oblique; branches mostly pendent, irregularly pinnately ramified; leaves broadly or elliptic-lanceolate, at the apex gradually attenuated into a longer or shorter fine point; leaf-cells rhombic- or narrow-elliptic; seta long, sinuous, red; capsule erect, straight or slightly curved, or inclined, prolate-ovoid or cylindric; lid conical, beak long and oblique;

on bark and leaves of trees, sometimes on rocks, in tropical and subtropical regions.

(165′) **Aërobryopsis.**** p. 71.

— Secondary stems rather closely foliose; midrib rarely more than slightly exceeding the middle of the leaf-blade, mostly very short; lid of capsule cupola-shaped, beak curved and oblique; secondary stems mostly long and pendent; leaves cordate, lanceolate, squarrosely erecto-patent; leaf-cells rhombic, ± elongate; seta short or long; capsule erect, prolate-spheroidal; tree-mosses of tropical and subtropical mountains.

(171′) *Section* **Euchrysocladium,** *of* **Chrysocladium.**** p. 74.

251. Primary or secondary stems or both bearing amphigastria, paraphyllia or pseudoparaphyllia (*whether numerous or scanty*) 252

— Primary as well as secondary stems devoid of amphigastria, paraphyllia or pseudoparaphyllia (*this part of the key again includes the genera with scanty paraphyllia or pseudoparaphyllia*) 307

252. Stems bearing amphigastria 253

— Stems bearing paraphyllia and pseudoparaphyllia (from here onwards the term pseudoparaphylliais included in the term paraphyllia) 255

253. Secondary stems simple rarely dichotomously branched; midrib very short or wanting, often furcate; leaves ovate-oblong, elliptic or ovate-lanceolate; leaf-cells rhombic, shortly or elongate-hexagonal; seta short; capsule erect, subspherical or prolate-spheroidal, neck thick; lid cupola-shaped, pointed; on tree-trunks in tropical and subtropical regions.

(277′) **Cyathophorella.**** p. 84.

— Secondary stems bearing pinnately disposed branches, of fern-like or dendroid appearance 254

254. Midrib produced as a spine; primary stem creeping in a vertical direction; secondary stems without an axial column; leaves ovate-lingulate; leaf-cells with a roundish lumen, faintly papillose; amphigastria ovate-lanceolate, subulate; capsule erect or nearly so, truncate-obovoid; lid cupola-shaped, beak short; bark-mosses of tropical and warmer regions.

(271′) **Lopidium.**** p. 83.*

— Midrib ending at some distance below the leaf-tip or entirely wanting; primary stem growing in a horizontal direction; secondary stems with an axial column; leaves oblique or horizontal broadly ovate, ovate-oblong or ovate-lingulate, mostly bordered by a seam; amphigastria adpressed, symmetric; leaf-cells rhombic or elliptic-subhexagonal; sporogones often several in the same perichætium; seta mostly elongate; capsule inclined to pendent, ellipsoidal or urceolate; lid cupola-shaped, beak oblique or nearly straight; on rotting tree-trunks, on bark, less frequently on rocks or forest ground in tropical, subtropical and temperate regions.

(273′) **Hypopterygium.**** p. 84.

255. Paraphyllia numerous all along the stem and also on branches, not confined to the vicinity of the branching-off points of the lateral shoots 256

— Paraphyllia either confined to the vicinity of the branching-off points of lateral shoots or scanty 275

256. Primary stem erect or ascending 257

— Primary stem *either* bending up and down (undulating) with or without rhizoids, *or* prostrate, *or* creeping . 260

257. Alar cells clearly developed, considerably wider than the remaining, elongate-hexagonal or linear, smooth or papillose laminar cells, hyaline or tinted; paraphyllia polymorphic; leaves triangular and cordate, or elliptic, produced into a channelled, lanceolate-subulate apical part, mostly falcately recurved; capsule inclined to horizontal, subcylindric, curved; growing on wet ground mostly in temperate regions.

(333′) *Forms of* **Cratoneurum.** p. 91.

— Alar cells only slightly or not at all differentiated or the leaf-corners with a well defined group of differentiated cells 258

258. Paraphyllia bearing thin, filiform, sinuous branches interwoven by a white or brown felt covering all the axes; leaves ovate-lanceolate, narrowly acuminate, ventrally very concave, with one or two folds on either side of the midrib; leaf-cells transparent, elongate-hexagonal to sublinear; seta 2-5 cm. long; capsule inclined to horizontal, cylindric, curved; lid cupola-shaped, acute; swamp-mosses of Northern regions.

(328′) **Helodium.** p. 90.

— Paraphyllia not interwoven into a dense felt; branches conspicuously pinnately disposed; the whole plant in outline lanceolate-linear 259

259. Paraphyllia partly filiform, simple or branched, partly lanceolate and ciliate; stem-leaves cordate-ovate, shortly lanceolately acuminate, with 4 deep longitudinal folds, at the line of insertion orange; leaf-cells thick-walled, both dorsally and ventrally with an inclined papilla over the lumen; seta elongate; capsule cylindric, suberect, slightly curved; lid conical, acute; in dry localities on soil, walls, roofs and rocks in temperate mountainous regions.

(327′) **Abietinella.**** p. 90.

— Paraphyllia mostly divided into filiform branchlets; branchlets pinnately disposed; leaves crowded, ovate, shallowly cordate, drawn out into a lanceolate-subulate point; leaf-cells elongate-hexagonal or -rhombic, smooth; seta about 4 cm. long; capsule obconical, horizontal, lid elongate-conical, apiculate; tropical, subtropical and temperate mountainous regions.

(330′) **Actinothuidium.**** p. 91.

260. Paraphyllia filiform or lanceolate, palmate, rarely furcate, not divided into distinct branches 261

— Paraphyllia variously branched 272

261. Midrib short, single or double or entirely absent . . 262

— Midrib extending beyond the middle of the leaf-blade . 265

262 Leaves unilaterally falcate, the broadly ovate lower leaves gradually attenuated into the lanceolate-subulate apical part; leaf-margins upwards sharply serrulate, leaf-cells narrowly linear, basal cells golden-yellow, cells at the leaf-corners shortly rectangular, orange; seta elongate; capsule inclined to horizontal; lid arched-conical, apiculate or with a terminal wart; on calcareous rocke and rock-debris, and on rotting tree-trunks and the exposed part of roots of trees in temperate regions.

(453′) **Hypnum imponens.**** p. 109.

Stem-leaves cordate-ovate, shortly lanceolately acuminate, *or* elliptic and terminating in a short point, *or* subabruptly produced into a ribbon-like tip, *or* broadly ovate and acute 263

263. Primary stem prostrate, without rhizoids ; branches short, pinnately disposed, leaves broadly ovate, acute, squarrosely recurved ; leaf-cells narrow-linear, at the leaf-corners rectangular to square ; seta about 15 mm. long; capsule large, erect, subspherical; peristome double; lid conical ; a moss of the Sikkim Himalaya.

(261′) **Orontobryum.**** p. 83.

— Primary stem creeping 264

264. Paraphyllia subulate ; lumen of the upper leaf-cells elliptic, of the lower linear, marginal cells of the lower half of the leaves subquadrate or rhombic ; capsule prolate-spheroidal, somewhat ovoid, with 8 longitudinal ribs ; lid cupola-shaped, obliquely beaked ; tropical bark-mosses.

(105′) **Glyptothecium.**** p. 67.

— Paraphyllia large, ovate or lanceolate or palmate ; leaf-cells narrowly linear, at the leaf-corners square or rectangular-oblong forming a well defined group ; capsule erect or inclined, subcylindric, ± curved ; lid cupola-shaped or conical, acute or obliquely beaked ; mostly on rotting tree -trunks in temperate regions.

(411′) **Heterophyllium.**** p. 102.

265. Leaves of stem, branches and branchlets not markedly differing from each other in shape 266

— Leaves of stem, branches and branchlets clearly differentiated as regards size and shape 270

266. Alar area conspicuous, concave, consisting of a well defined and sharply delimited group of inflated hyaline or brownish-yellow cells extending to the midrib, stem ± covered with a felt of red rhizoids ; branches short, bifarious ; stem-leaves decurrent, broadly cordate-triangular, narrowly lanceolate-acuminate ; in various dry and wet situations in temperate regions.

(334′) **Cratoneurum filicinum.** p. 91.

— Alar area not developed, but the cells at the leaf-corners somewhat differentiated 267

267. Leaves deeply plicate ; leaf-cells prosenchymatic or elongate-hexagonal 268

— Leaves with two shallow or indistinct folds, the folds confined to the basal part or extending higher up; leaf-cells elliptic or rounded-4—6 sided 269

268. Plant-mass light-green to golden-brownish; branches erect, short, irregularly pinnately disposed, sometimes clustered. lycopodioid; leaves broadly lanceolate, gradually long-acuminate, with two or four longitudinal folds, margins recurved; inner and upper leaf-cells narrowly oblong to linear, at the leaf-corners ± quadratic; midrib valid, extending to the leaf-tip; seta 5—10 mm. long; capsule erect, prolate-spheroidal; peristome double; lid conical, short and blunt; on roots, stems and branches of trees, siliceous rocks and rock-debris in temperate regions.

(304′) **Lescuraea.**** p. 86.

— Plant-mass yellowish- to dark-green; branches irregularly pinnately disposed, bifarious, thick, nearly catkin-like; leaves ovate-lanceolate, long-acuminate, with several deep longitudinal folds; inner and upper leaf-cells prosenchymatic, elongate-hexagonal, at the leaf-corners ± quadratic, the median basal cells thick-walled and pitted; midrib not reaching up to the leaf-tip; seta 15—20 mm. long; capsule inclined to horizontal, ellipsoidal; peristome double; lid short-conical on calcareous rocks in mountainous regions.

(477′) **Ptychodium plicatum.** p. 115.

269. Plant-mass from-light- to dark- or brownish-green, when old rust-brown; primary branches often ascending, branchlets often clustered, unequal in length; leaves ovate or ovate-oblong, ending in a short or somewhat longer lanceolate, often oblique point, biplicate at the base; midrib valid, usually not quite reaching up to the leaf-tip; leaf-cells small, roundish- or elliptical-4—6-sided or rhombic, either with a papilla over the lumen or the cell-corners papillarly thickened; seta 5—15 mm. long; capsule inclined, curved, monosymmetric, ovoid-subcylindric; peristome double; lid subconical, obliquely pointed or beaked; on rocks and rock-debris in temperate mountainous regions.

(306′) **Pseudoleskea.**** p. 87.

— Plant-mass yellowish-green or yellowish-brown; primary branches regularly or irregularly pinnately disposed;

leaves ovate, ending in a narrow-lanceolate or subulate point; stem-leaves distinctly or indistinctly plicate; midrib valid, reaching up to the leaf-tip or projecting beyond it; leaf-cells ± translucent, elliptic-hexagonal, mostly with a papilla over the lumen, at the leaf-corners quadratic; seta 15—25 mm. long; capsule inclined, cylindric, when dry horizontal and curved; peristome double; lid arched-conical, acute; in forests on rock-debris, exposed tree-roots and the base of tree-trunks and on forest ground in temperate, subtropical and tropical regions.

(318′) **Haplocladium.**** p. 88.

270. Leaves only slightly trimorphic, the broadly cordate, biplicate base of the stem-leaves subabruptly contracted into the subulate, recurved, hyaline apical part; branch-leaves smaller, broadly elliptic and shortly acuminate; pinnule-leaves still smaller, elliptic, rounded at the apex and shortly pointed; midrib valid, reaching up to the leaf-tip or ending close to it; most of the leaf-cells elliptic, slightly polygonal, opaque, densely and finely papillose over the lumen; seta thin; capsule inclined to horizontal; beak of lid long and thin; on shady grounds in the Indian Archipelago.

(322′) **Thuidiopsis.** p. 89.

— Leaves markedly di- or tri-morphic 271

271. Stem-leaves symmetric, branch-leaves and pinnule-leaves asymmetric, the midrib being placed more to one side of the leaf-blade; stem-leaves ovate-lanceolate, their cells elliptic- or elongate-hexagonal, very transparent, with a papilla over the lumen; pinnule-leaves bifarious, ovate, blunt, margins recurved; seta elongate; capsule horizontal to pendent, ellipsoidal, when dry curved; endostome and exostome of the same length; lid conical, beak straight, long and fine; on marly soil, rotten wood, the roots and bark of trees in tropical regions.

(322′) **Pelekium.**** p. 89.

— All the leaves symmetric or nearly so; stem-leaves cordate-triangular or ovate, upwards acuminate or subulate, branch-leaves always smaller, ovate-lanceolate, shortly acuminate, or elliptic-lanceolate, acute or obtuse,

their midrib shorter and weaker than that of the stem-leaves; leaves of the secondary and tertiary branches much smaller, mostly elliptic or ovate-lanceolate; seta elongate; capsule mostly inclined to horizontal, ellipsoid to cylindric; lid conical, beak short or long, curved; calyptra hood-shaped, beaked; on forest ground, rock-debris and the bark of trees in tropical, subtropical and temperote regions.

(323′) *Subgenus* **Thuidiella** *of* **Thuidium.**** p. 89.

272. Primary stem underground, creeping, covered with a felt of rhizoids; secondary stems erect, 5—15 cm. high; branch-leaves lanceolate-lingulate, upwards coarsely serrate; midrib valid, not quite reaching, up to the leaf-tip; leaf-cells narrow-rhombic, towards the leaf-base more-elongate, at the leaf-corners wider and subisodiametric; seta 15—45 mm. long; capsule erect, prolate-spheroidal; peristome double; lid cupola-shaped, beaked, calyptra hood-shaped, enveloping the capsule, in wet places, ditches and swamps in temperate and colder regions.

(65′) **Climacium.**** p. 65.

— Primary stem over ground, undulating; ground- and tree-mosses 273

273. Midrib of the stem-leaves extending into the subulate part of the leaf-blade, terminating at or close to the leaf-tip; leaves lanceolate-subulate; leaf-cells thick-walled, elliptic- or elongate-hexagonal, with a single papilla over the lumen; seta elongate, thick; capsule inclined to horizontal; peristome double; lid cupola-shaped, beak oblique; on trees, rocks and soil in temperate and tropical regions.

(325′) *Subgenus* **Euthuidium** *of* **Thuidium.**** p. 89.

— Midrib furcate or simple, never closely approaching the leaf-tip; basal leaf-cells oblong, orange or yellowish-red 274

274. Leaves deeply longitudinally plicate, shortly or lanceolately acuminate; midrib single or double, usually ending at or above the middle of the leaf-blade; main branches pinnately or bipinnately ramified; leaf-cells narrow-linear; seta 10—25 mm. long, twisted; capsule

horizontal, monosymmetrically ovoid; peristome double; lid conical; on forest ground, rock-debris, rocky declivities and exposed roots of trees in temperate hilly and mountainous regions.

(486′) **Hylocomiastrum.** p. 116.

— Leaves feebly longitudinally plicate, ovate- or elliptic-oblong, subabruptly contracted into a long, sinuous point; main branches bipinnately or tripinnately ramified; midrib not extending beyond one-fourth of the leaf-blade, double; leaf-cells narrow-linear, basal cells oblong; pinnule-leaves of the first order elliptic, abruptly narrowed into a point, those of the second order oblong, gradually acuminate; seta 15—25 mm. long, twisted; capsule inclined, ellipsoidal; peristome double; lid cupola-shaped, beak short and thick; on forest and meadow ground and rocky declivities in temperate and cold regions.

(487′) **Hylocomium.*** p. 116.

275. Paraphyllia confined to the vicinity of the base of the branches 276
— Paraphyllia altogether scanty (*these genera are again dealt with together with the genera not possessing any paraphyllia*) 291
276. Midrib short, not extending upwards to the middle of the broad lower part of the leaf-blade, bifid, double or entirely wanting 277
— Midrib single, entire or bifid, extending at least to the middle of the broad lower part of the leaf-blade, more frequently higher up 283
277. Leaves broadly ovate-oblong or elliptic, blunt or minutely apiculate 278
— Leaves upwards ± abruptly attenuated into a narrow, lanceolate or subulate, mostly either recurved or falcate or helicoid apical part 279
278. Leaves ovate-oblong; midrib double or absent; branches ± regularly pinnately disposed; upper ends of stem and branches pointed and rigid from the upper leaves being convolute and twisted together; stem-leaves ovate-oblong, blunt, apiculate; leaf-cells sinuously linear, at the leaf-corners forming a sharply delimited hyaline group; branch-leaves smaller, ovate to ovate-lanceolate;

seta 4—7 cm. long; capsule horizontal, monosymmetric, subcylindric; lid arched-conical; in acid swamps and ditches, on wet meadows, damp woodwork, at the base of tree-trunks, sometimes on wet rocks in temperate regions.

(348′) **Calliergonella cuspidata.** p. 93.

— Leaves asymmetrically elliptic; midrib unequally bifid; stem prostrate below, finally ascending, bearing simple tumid, blunt branches; leaves broadly elliptic or rounded rhombic, sometimes nearly circular; leaf-cells linear-vermiform, at the leaf corners forming a roundish, yellowish group; seta 1—2 mm. long, twisted, capsule inclined, monosymmetric, ovoid-subcylindric, curved; peristome double; lid cupola-shaped, orange, terminated by a wart; on non-calcareous rock-debris in rapidly flowing mountain streams and at the edges of waterfalls in temperate regions.

(345′) **Hygrohypnum dilatatum.**** p. 92.

279. Plants strikingly resembling ostrich feathers; stems commonly erect, rarely procumbent or prostrate, arranged in rows, usually bent zigzag fashion, 5—20 cm. high; branches at right angles to the stem, close-set, their upper ends falcate; stem-leaves falcate or helicoid, lanceolate-subulate, longitudinally deeply plicate, upwards serrulate; branch-leaves much narrower; leaf-cells linear-vermiform, basal cells shorter, at the leaf-corners a few square or short-rectangular; seta 4—5 cm. long, sinuous; capsule inclined to horizontal, dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, cylindric, curved; peristome double; lid subhemispherical, ending in a wart; on damp forest ground, blocks of rocks, sometimes spreading on to tree-trunks, in temperate hilly and mountainous regions.

(469′) **Ptilium crista-castrensis.**** p. 115.

— Branches irregularly or ± regularly pinnately disposed, the plants not resembling ostrich feathers 280

280. Margins of leaves denticulate or finely serrate along nearly the whole of their length 281

— Margins of leaves quite entire or remotely serrulate only close to the leaf-tip 282

281. Rhizoids numerous attaching the main stem closely to the substratum; stem closely branched; paraphyllia multiform; leaves close-set, both dry and moist squarrosely recurved, lower part broadly ovate or suborbicular, abruptly contracted into a lanceolate, channelled subulate apical part; leaf-cells narrow-prosanchymatic, 4—6 (6—10) times as long as broad, alar cells quadratic, walls yellow, forming a small group; seta 1—2 cm. long; capsule inclined to horizontal, ellipsoidal, slightly curved, urn wrinkled when empty; peristome double; lid elongate, arched-conical; on calcareous rocks in temperate and colder regions.

(337′) **Campylophyllum.**** p. 91.

— Rhizoids in clusters placed at intervals; paraphyllia scanty, ovate to subulate; leaves ±crowded, spreading or one-sided to falcate, decurrent, stem-leaves cordate-ovate, rapidly passing into the lanceolate-subulate upper part; leaf-cells narrow-linear, at their upper corners with an inclined papilla; branch-leaves ovate-lanceolate, narrower; seta 10—25 mm. long, red; capsule inclined to horizontal, ovoid; lid conical, blunt or acute; mostly on rocks and tree-trunks in temperate, subtropical and tropical regions.

(467′) **Ctenidium.**** p. 114.

282. Stem prostrate, entirely without rhizoids, pectinately pinnate; margins of leaves quite entire; leaves falcate, broadly lanceolate, ending in a subulate point base cordate; leaf-cells narrow-linear, smooth, basal cells rectangular, yellowish-red along the line of insertion of the leaves, at the leaf-corners quadratic; on moist rocks, stony declivities, in cavities and clefts in rocks, in temperate and arctic regions.

(455′) **Pseudostereodon pocerrimum.** p. 110.

— Stem creeping, not pectinately pinnately branched; leaves scantily serrulate only near their apex; on rotting tree-trunks mostly in mountainous regions.

(453′) *Species of* **Hypnum.**** p. 109.

283. Leaves distinctly, often sharply or deeply longitudinally plicate, not aquatic, but growing on various substrata . 284

— Leaves obtusely or not at all plicate 286

284. Branch- and stem-leaves markedly different from each other; stem-leaves from a broadly cordate-ovate or cordate-triangular basal part subabruptly or gradually attenuated into a short or comparatively long apical part; midrib ending as a spicule on the dorsal surface of the leaf-blade; rhizoids in stattered clusters; branches pinnately or dendroidly disposed; ground-, rock- and tree-mosses chiefly of temperate regions.

(378′) *Subgenus* **Panckowia** *of* **Eurhynchium.**** p. 98.

— Branch-leaves not differing essentially from the stem-leaves 285

285. Upper part of stem and branches conspicuously uncinate; all leaves unilaterally falcate, apex often helicoid, basal part lanceolate, attenuated into a long subulate apical part; lid of capsule high cupola-shaped, orange; apicula purple; on grassy, humous and forest grounds, on siliceous rocks and rock-debris, on walls, thatched roofs and the roots, stems and branches of trees in temperate regions.

(343′) **Drepanocladus uncinatus.**** p. 92.

— Branches and branchlets straight or gently curved, never uncinate, either irregularly or pinnately disposed; leaves ovate-lanceolate, the apical part acuminate or subulate; leaf-cells prosenchymatic; seta elongate, purple, dry dextrorsely and senitrorsely twisted; capsule inclined to horizontal, prolate-ovoid to cylindric; peristome double; lid obliquely conical, acute or shortly beaked; on grassy places, borders of roads, walls, calcareous and siliceous rocks and rock-debris, also on tree-trunks, in temperate regions.

(352′) **Camptothecium.** p. 94.

286. Midrib, at least that of either the stem-leaves or that of the branch-leaves, ending on the dorsal side of the leaf-blade as a spicula; stem creeping or ascending; branches clustered or irregularly pinnately disposed; leaves ovate or subtriangularly elliptic, acuminate serrate; leaf-cells narrow-prosenchymatic, smooth, at the leaf-corners differentiated, basal cells shorter; seta elongate, red; capsule inclined to horizontal, rarely suberect, monosymmetric, ellipsoidal to prolate-ovoid; lid arched-conical,

beak long and oblique; on soil, rock-debris and the bark of trees in temperate and tropical regions.

(377′) **Oxyrrhynchium.** p. 97.

— Midrib ending within the leaf-blade 287

287. Growing in stagnant and flowing water, or in wet or swampy places 288

— Growing on the ground, on rocks and rock-debris and on tree-trunks 290

288. Midrib reaching not higher up than about two-thirds of the leaf-blade, here and there much shorter or furcate; stem irregularly branched, at intervals emitting clusters of brownish-red rhizoids; leaves close-set, on the main stem erecto-patent, on the branches unilaterally curved to falcate, lower part ovate-oblong or -lanceolate, upwards narrowly pointed; leaf-cells linear, ± vermiform, thin-walled, transparent, at the leaf-base rectangular; seta 15—20 mm. long, dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, cylindric; lid conical, acute or blunt; growing on wet, periodically flooded rocks and rock-debris, on submerged woodwork, on walls and the base of trees at the edge of rivers and rivulets in temperate regions.

(345′) **Hygrohypnum palustre.**** p. 92.

— Midrib reaching close to or right up to the leaf-tip or projecting beyond it 289

289. Leaves broadly ovate or ovate-lingulate to suborbicular, either obtuse or ending in a short point; stem in deep water erect, in drying up places prostrate; leaf-cells linear-hexagonal, basal cells shorter, alar cells quadratic or polygonal, at first hyaline, later on tinted.

(347′) *Species of* **Calliergon.**** p. 93.

— Leaves ovate- or oblong-lanceolate; leaf-cells elongate-hexagonal, alar cells wider, either similar in shape to the other cells or quadratic or rectangular, with thick, yellow walls; growing in water or wet places in temperate regions.

(337′) **Hygroamblystegium.**** p. 91.

290. Alar cells distinctly differentiated, but usually passing ± gradually into the elongate-rhombic or -linear non-alar

cells, square or rectangular or elongate-hexagonal; leaves often slightly plicate, the ovate or cordate-triangular basal part narrowed into a narrow-lanceolate, sharply acuminate upper part; branch-leaves usually shorter and narrower; seta elongate; capsule inclined to horizontal, ovoid to cylindric; peristome double; lid arched-conical, blunt or acute; ground-, stone- and rock-mosses of temperate and of mountainous subtropical and tropical regions.

(359′) **Brachythecium.**** p. 94.

— Alar cells small and square and little differentiated; most of the leaf-cells elongate-hexagonal to linear; leaves never plicate, mostly narrow-lanceolate, long-acuminate; seta elongate, S-shaped; capsule sub erect to horizontal, prolate-spheroidal to cylindric; peristome double; lid arched-conical, beak rather long; on damp walls and rocks and on the trunks and branches of trees in temperate and tropical regions.

(375′) **Rhynchostegiella.**** p. 97.

291. Midrib extending beyond the middle of the leaf-blade . 292
— Midrib scarcely reaching up to the middle of the leaf-blade, often much shorter or entirely wanting . . . 296
292. Midrib ending about in line with the lower end of the lanceolate-subulate terminal part of the leaf; stem densely foliose; main branches irregularly pinnately disposed; leaf-cells elliptic to rhombic-subhexagonal, smooth or with a papilla over the lumen, smaller or transversely oblong along the margins, forming several rows nearer to the base of the leaf; seta 5—10 mm. long; capsule erect, prolate-spheroidal; peristome double; lid conical, blunt; on tree-trunks in temperate regions.

(299′) **Lindbergia.**** p. 86.

— Midrib ending close to the leaf-tip or projecting beyond it 293
293. Midrib reaching up to the very leaf-tip or projecting beyond it; leaf-cells elliptic-or elongate-hexagonal, usually with a papilla over the lumen; seta 15—25 mm. long, red; capsule inclined, cylindric; lid arched-conical, acute; on forest ground, tree-trunks and rocks in temperate and subtropical regions.

(318′) *Species of* **Haplocladium.**** p. 88

— Midrib approaching, but not quite reaching up to the leaf-tip 294

294. Leaf-cells smooth, narrow-oblong along the middle and upper parts of the leaf-blade; stem stoloniform and stoloniferous, sinuous, creeping; main branches dividing upwards into clustered or pinnately disposed secondary branches, ultimate branchlets when dry nearly circularly decurved; basal leaf-cells small, quadratic extending from the leaf-corners to near the midrib and upwards along the margin; seta 1—1·5 cm. long, purple; capsule inclined, ellipsoidal; lid cupola-shaped, beak oblique; ground-moss of temperate regions.

(351′) **Scorpiurium.** p. 94.

— Leaf-cells papillose, suborbicular, elliptic or roundish short-rectangular 295

295. Branches closely placed, clustered, short, ascending; leaves ovate or oblong, upwards lanceolately acuminate; leaf-cells small, elliptic, finely papillose, sometimes nearly smooth, basal cells near the midrib elongate, cells at the leaf-corners nearly square or shortly oblong; seta 1—2 cm. long; capsule inclined to horizontal, ellipsoid to subcylindric; lid conical, pointed, scarcely beaked; bark- and rock-mosses of temperate and tropical regions.

(307′) **Pseudoleskeopsis.**** p. 87.

— Branches irregularly or subregularly and rather laxly pinnately disposed; leaves broadly ovate, gradually or abruptly lanceolately or subulately attenuated, sometimes ending in a hair-point; leaf-cells subpolygonally orbicular or elliptic with one or several papillae; seta up to 3 cm. long; capsule inclined to horizontal, monosymmetrically obovoid, with a short neck; peristome double; lid conical, passing into a stout beak; ground, rock- and tree-mosses of temperate and tropical regions.

(317′) **Claopodium.**** p. 88.

296. Alar cells clearly differentiated 297

— Alar cells feebly or not at all differentiated 300

297. Lower alar cells laxly knitted, thin-walled, sometimes tinted, remaining cells shortly and narrowly linear; leaves one-sidedly falcate, ovate-lanceolate, ± long-acuminate; branches close-set, pinnately disposed;

midrib absent or short and double; capsule erect, cyclindric; inner peristome adhering to the exostome; lid conical, blunt; on tree-trunks in tropical and subtropical regions.

(452′) **Stereodon.** p. 109.

— Alar and basal cells large, golden-yellow to brown, very rarely hyaline, bordered on their upper side by a small group of square, parenchymatic cells; capsule inclined to horizontal, ending in a beak or wart . . . 298

298. Upper leaf-cells thick-walled; leaves, in most species, at least upwards with a ± broad seam and coarsely serrate, seam rarely rather indistinct; primary stem firm, often conspicuously sinuous; secondary stems erect, upwards with clustered or pinnately disposed branches; leaf-cells narrowly prosenchymatic; seta very long and sinuous, purple, capsule large, horizontal, prolate-spheroidal; lid conical, beak long; on forest ground and the bark of trees in Farther India and the Malayan and Pacific Islands.

(414′) **Trismegistia.**** p. 103.

— Leaf-cells thin walled; leaves without a marginal seam . 299

299. Leaves from feebly one-sided to conspicuously unilaterally falcate, ovate-lanceolate or -subulate, upwards acutely serrate; ends of stems and branches acute or obtuse; branches pinnately disposed; leaf-cells narrow-linear, smooth; basal cells shorter, tinted, alar cells linear-oblong, decreasing in length inwards, inflated, golden-yellow or brown, surmounted by a group of smaller, polygonal, hyaline cells; seta very long, sinuous, purple; capsule inclined, small, somewhat asymmetric, short-cylindric; lid cupola-shaped, ending in a wart; tree-mosses of the Indian Archipelago.

(412′) **Mastopoma.** p. 102.

— Leaves in their broader part symmetric, when moist erecto-patent, ventrally very concave, ovate, either ending in a hair-point or acute, lanceolate-acuminate or -subulate, quite entire or upwards serrulate; ends of stem and branches mostly stiff and pointed; branches pinnately or bipinnately disposed, horizontally spreading; leaf-cells narrow-prosenchymatic, mostly smooth; basal cells

with thicker walls, golden-yellow, alar cells inflated, oblong, golden-yellow or brownish, sometimes hyaline, surmounted by some smaller, thin-walled, oblong, hyaline cells; seta very long, sinuous, purple; capsule horizontal, elongate-ellipsoidal, monosymmetric; lid conical, either crowned by a wart or ending in a short or long beak; mostly on tree-trunks in tropical and subtropical regions.

(412′) **Acanthocladium.**** p. 102.

300. Leaf-cells narrow-linear, prosenchymatic. 301
— The majority of the leaf-cells suborbicular or rounded-4—6-sided, or elliptic, rhombic, broadly or narrowly oblong 304
301. Leaves commonly or always differentiated into dorsal and ventral on one hand and lateral leaves on the other; alar cells either scantily or feebly or not at all differentiated 302
— Leaves similar all round; cells at the leaf-corners different from the inner and upper cells 303
302. Leaves in 8 rows, shortly acuminate or blunt, dorsal and ventral leaves adpressed and alternately inclined right and left, lateral leaves asymmetric, ± spreading; primary stem covered with a felt of brown rhizoids; secondary stems horizontal, as much as 12 cm. long, with bifariously disposed simple or pinnate branches; leaf-cells narrow-linear, smooth, at the leaf-base shorter, alar cells not differentiated; seta 10—16 mm. long; capsule erect, cylindric, straight or slightly curved; peristome double; lid elongate-conical, gradually attenuated into a slightly curved beak; on the trunks and branches of trees in moist tropical regions.

(128′) **Trachyloma.**** p. 68.

— Leaves ovate or elliptic- or ovate-lanceolate, ± asymmetric, one-sided or falcate, upwards short- or long-acuminate to subulate; stem beset with clusters of rhizoids; leaf-cells narrow-prosenchymatic, basal cells shorter and wider, alar cells scanty and small; seta elongate; capsule horizontal, ellipsoid to cylindrical; lid large, cupola-shaped or arched-conical, apiculate or ending in a short beak; on forest ground, tree-trunks and rocks in tropical and subtropical regions.

(455′) *Species of* **Ectropothecium.**** p. 110.

303. Stem and branches closely foliose, tamariscoid; branches pinnately disposed, *either* short and blunt *or* longer and pinnately ramified; leaves broadly ovate or ovate-oblong, subabruptly or gradually contracted into a ± subulate apical part; majority of the narrow-linear leaf-cells papillarly protruding at their upper corners, square to elliptic-subhexagonal; seta very long, uncinately curved; capsule obconic, ovoid-cylindric or prolate-spheroidal, straight or curved; lid cupola-shaped or conical, acute or ending in a wart; forest- and meadow-mosses, of temperate, rarely of tropical regions.

(481′) **Gollania.**** p. 115.

— Stem and branches more openly foliose; branches clustered or regularly or irregularly pinnately disposed; leaves broadly ovate or cordate-ovate, gradually or subabruptly contracted into a long, channelled, mostly squarrosely recurved subulate point; leaf-cells linear, prosenchymatic, smooth, at the leaf-corners small, quadratic, walls thick and yellowish; seta long, red or yellowish-red, dry twisted; capsule inclined to horizontal, subcylindric, curved; on tree-trunks, walls, calcareous rocks or swampy ground in temperate and cold regions.

(335′) **Campylium.**** p. 91.

304. Branch- and stem-leaves markedly differing from each other, branches irregularly pinnately disposed. . . 305

— Branch- and stem-leaves not essentially differing from each other; branches one-sidedly or regularly or irregularly pinnately disposed 306

305. Stem-leaves erecto-patent or squarrosely spreading, cordate-ovate, gradually or subabruptly long-acuminate; branch-leaves smaller, broadly ovate, acute or subobtuse; leaf-cells near the middle of the blade ± oblong, the remainder roundish-4—6-sided, smooth or with several papillæ over the lumen; seta long; capsule inclined to horizontal, ovoid or ellipsoid, curved, with a short neck; peristome double; lid arched-conical; blunt or beaked; on forest ground and rocks in temperate and alpine regions.

(310′) **Heterocladium.** p. 87.

— Stem-leaves from abroadly ovate basal part gradually acuminately attenuated into a capillary point; branch-

leaves ovate-lanceolate; leaf-cells elongate-rhombic, smooth, at the leaf-corners numerous quadratic or transversely oblong cells; seta scarcely 1 cm. long; capsule erect, prolate-spheroidal; lid short-conical; N. W. Himalaya.

(309′) **Leptopterygynandrum.**** p. 87.

306. Secondary stems unilaterally disposed, 2—3 cm. long, ascending, then decurving and flagellate and rooting; leaves densely imbricate, ovate, acute or subulate; midrib short and delicate; leaf-cells long- and narrow-rhombic, inner basal cells sublinear, marginal cells quadratic, cells thickened at their corners, dorsally sometimes conspicuously papillose; seta long, twisted; capsule erect, cylindric; peristome double; lid conical, orange, mostly obliquely and bluntly beaked; on trunks and roots of trees and on siliceous rocks in temperate and alpine regions.

(382′) **Pterygynandrum.**** p. 98.

— Branches regularly or irregularly pinnately disposed; leaves when moist ± spreading ovate-cordate, long-acuminate; midrib either ending about the middle of the leaf-blade or short and unequally bifid or absent; leaf-cells smooth, the inner ones subcircular or elliptic, basal and marginal cells square; seta 10—15 mm. long; capsule inclined, subcylindric, curved; peristome double; lid conical, beak oblique; on roofs, walls, calcareous rock, tree-trunks in temperate and colder regions.

(303′) **Pseudoleskeella.** p. 86.

307. Midrib extending at least to the middle of the leaf-blade, commonly higher up or even projecting beyond the leaf-tip, mostly strong and single, more rarely two valid midribs 308

— Midrib either very weak and just reaching up to the middle of the leaf-blade, or more frequently shorter, single or double or entirely absent 388

308. Midribs two 309

— Midribs single 315

309. Marginal cells narrow-linear, in one or several rows forming a well defined seam; leaves in 5—8 rows, the ventral and dorsal leaves adpressed, oblique, the lateral leaves

larger, divergent; leaf-cells smooth, mostly rounded-hexagonal, basal cells elongated; seta 1—3 cm. long, purple; capsule inclined to horizontal, monosymmetric, ellipsoidal to subcylindric; peristome double; lid conical, beak long and straight; calyptra conical, cap-shaped; ground-, rock- and tree-mosses of tropical and subtropical regions.

(236′) **Cyclodictyon.**** p. 81.

— Leaves without a marginal seam 310

310. Upper ends of the midribs protruding from the surface of the leaf-blade in the form of two teeth at some distance below the leaf-tip; secondary stems upwards pinnately to tripinnately branched; stem-leaves ovate to ovate-oblong, branch-leaves smaller; leaf-cells rhombic to elongate-rhombic, lumen elliptic, basal cells tinted; seta short; capsule erect, obovoid or ellipsoidal; peristome double; lid conical, beak straight; tropical tree-mosses.

(217′) **Pilotrichum.** No page.

— Midribs ending within the lamina 311

311. Midribs ending well above the middle of the leaf-blade; leaves in 8 rows, the ventral and dorsal leaves obliquely adpressed, the lateral leaves larger and spreading . 312

— Midribs ending about the middle of the leaf-blade . . 313

312. Midribs ending close to the leaf-tip; branches regularly or irregularly pinnately disposed, simple or sparsely ramified; leaves oblong or ovate-oblong, obtuse or apiculate or very shortly acuminate, rarely rounded at the apex or longer acuminate; leaf-cells elliptic-subhexagonal, usually with a papilla over the lumen, basal cells elongate and smooth; seta elongate, red; capsule horizontal, somewhat monosymmetric, prolate-ovoid, neck conspicuous; peristome double; lid cupola-shaped, beak subulate; on tree-trunks and decaying wood, rarely on rocks, in tropical regions.

(238′) **Callicostella.**** p. 81.

— Midribs ending at some distance below the leaf-tip; branches numerous, variously disposed, prostrate, irregularly pinnately ramified; ovate-lanceolate, short- or long-acuminate, or oblong or ovate-oblong, sometimes lingulate or obovate-oblong; leaf-cells elliptic- or oblong-

subhexagonal to linear, smooth or papillose at the cell-corners; seta elongate, red; capsule inclined to horizontal, ellipsoidal or obovoid, neck long and thick; peristome double; lid cupola-shaped, beak subulate; calyptra conical, cap-shaped, margin lobulate; tree- and rock-mosses of tropical and subtropical regions.

(240′) **Hookeriopsis.**** p. 81.

313. Leaves disposed uniformly all round, ovate, terminating in a narrow-lanceolate, nearly capillary point; midribs projecting scarcely beyond the middle of the leaf-blade, or the midrib deeply bifurcate; leaf-cells elongate-rhombic, pellucid, smooth at the leaf-corners quadratic or transversely oblong; seta scarcely 1 cm. long; capsule erect, prolate-spheroidal; lid short, conical; on trees and rocks, N. W. Himalaya.

(309′) **Leptopterygynandrum.**** p. 87.

— Leaves bifariously disposed or the dorsal and ventral differentiated from the lateral leaves . . . 314

314. Leaves in 8 rows, ± asymmetric, the dorsal and ventral leaves either obliquely adpressed or parallel to the axis, lateral leaves larger, ± spreading; main stem moderately densely beset with rhizoids; leaves oblong or lingulate, short- or long-acuminate; leaf-cells elongate-hexagonal or -rhombic, sometimes linear, lower cells more elongate, at the leaf-corners shorter, all of them smooth; seta elongate or only 2 mm. long; capsule erect, rarely inclined, prolate-spheroidal; peristome double; lid conical, beak straight; calyptra conical, cap-shaped, glabrous or hairy; on the trunks and branches of trees, rarely on rocks, in tropical regions.

(243′) **Lepidopilidium.**** p. 81.

— Leaves bifarious, ovate or lingulate, spreading, blunt, dorsally beset with long mamillae; leaf-cells linear, both dorsally and ventrally with several rows of fine papillae; seta 20—35 mm. long; capsule mostly nodding, thick-ovoid, monosymmetric; peristome double; lid large, cupola-shaped, ending in a wart; calyptra hood-shaped, glabrous: on rotting tree-trunks in tropical regions.

(255′) **Pseudohypnella verrucosa.**** p. 82.

315. Dorsal leaves much smaller, resembling amphigastria, lateral leaves bifarious; branches mostly pinnately disposed; leaves oblong or ovate-oblong or elliptic, blunt or lanceolately acuminate: midrib ± projecting beyond the leaf-tip; leaf-cells isodiametric, suborbicular or hexagonal, sometimes somewhat elongated, smooth or with a papilla either over the lumen or over the upper and inner cell-walls, basal cells near the midrib wider and rectangular; seta elongate; capsule erect and prolate-spheroidal, or inclined to pendent and ellipsoidal to cylindric, straight or slightly curved, when dry deeply furrowed, with 8 striae; peristome double; lid cupola-shaped, beaked; calyptra hood-shaped; tree- and rock-mosses of tropical and subtropical regions.

(52′) **Rhacopilum.**** p. 64.

— Dorsal leaves not markedly differing from the other leaves, in no case resembling amphigastria 316

316. Leaf-cells *either* not essentially differentiated from each other especially as regards their shape, *or* only the cells close to the midrib or those close to the base or apex of the leaves differentiated, *or* the basal cells quite gradually passing into the differently shaped upper cells, but neither an alar group of cells nor a marginal band clearly differentiated from their neighbours, the cells at the leaf-base or those at the leaf-corners sometimes more laxly knitted, but not otherwise differentiated . . 317

— *Either* an alar group of cells markedly differentiated as regards shape, size and colour, *or* the marginal and intramarginal together with a basal set of cells, *or* the cells at the leaf-corners clearly differentiated from the remainder and either sharply delimited from them or gradually passing into them, sometimes hyaline and forming a well marked group, but not essentially differing in shape and size from the chlorophyllose inner and upper cells 331

317. Stem ± densely covered with a brown felt of rhizoids; branches erect, short, simple or furcate 318

— Rhizoids in clusters or scanty, or if numerous not forming a dense felt 320

318. Leaf-cells finely papillose, most of them square, the cells near the midrib rectangular; leaves when dry flexuously adpressed, lanceolate to linear, narrowly acuminate, margins revolute; midrib usually slightly projecting be-

yond the leaf-tip; leaf-cells small, isodiametric, transparent, basal cells near the midrib rectangular; seta straight; capsule usually only slightly exerted, ovoid; peristome simple; lid capula-shaped, plicate, glabrous, enveloping the capsule; on trees, rocks and rock-debris in tropical and temperate regions.

(10′) **Glyphomitrium.**** p. 60.

— Leaf-cells smooth; calyptra hood-shaped, large; spores large 31

319. Branches closely spaced, erect, densely foliose; leaves lanceolate or elongate-oblong, acute or subobtuse, margins upturned; midrib extending close up to the leaf-tip; leaf-cells rounded-polygonal; seta elongate; capsule ovoid, when empty wrinkled; peristome simple; lid conical, beak oblique; calyptra glabrous, conical when young; mostly tree-, rarely rock-mosses of temperate regions.

(26′) **Drummondia.**** p. 62.

— Branches somewhat remote, erect, at their lower part covered with a rhizoidal felt; leaves obovate-oblong, the upper longer, apical leaves spatulate, with a marginal seam; midrib extending close to the leaf-tip or shortly projecting beyond it, with a central group of small, thin-walled cells; leaf-cells elliptic-subhexagonal, downwards gradually more elongate, at the leaf-base elongate-rectangular; setae about 1 cm. long; capsule erect, prolate-spheroidal, scantily mamillose; peristome double; lid arched-conical, beak long; calyptra glabrous or densely hairy; tree-mosses of subtropical and tropical regions.

(407) **Orthomnium.**** p. 54.

320. Midrib upwards sinuous; secondary stems simple or branched, when dry helicoidally curved; leaves lanceolate, shortly acuminate, upwards irregularly serrate; leaf-cells very small, subquadratic, smooth; seta 10—15 mm. long, red; capsule erect, cylindric; peristome double; lid conical, passing into a short beak; on tree-trunks and rocks in tropical and subtropical regions.

(315′) **Herpetineurum.**** p. 88.

— Midrib straight 321

321. Secondary stems upwards dendroidly or frondosely branched, below bearing small hypophylls 322

— Branches regularly, irregularly or obscurely pinnately disposed, sometimes verticillate 324

322. Midrib ending quite close to the leaf-tip; leaf-cells roundish-tetragonal to -hexagonal, the upper cells with a small papilla over the lumen; bark-, rarely rock-mosses of warmer regions.

(195′) *Some species of section* **Urocladium** *and all species of section* **Eupinnatella** *of* **Pinnatella.**** p. 78.

— Midrib ending at some distance below the leaf-tip; seta 4—40 mm. long 323

323. Leaves lingulate-subspatulate, broader at the base, upwards coarsely dentate; leaf-cells upwards elliptic or rhombic, downwards gradually more elongate to linear; seta about 15 mm. long; capsule horizontal to pendent, monosymmetric, ellipsoid; peristome double; lid conical, beak oblique; a Ceylonese moss.

(200) *Section* **Pandurella** *of* **Porothamnium.**** p. 78.

— Leaves ovate-oblong, broadly acute, at the upper and irregularly, deeply and sharply serrate; upper leaf-cells broadly rhombic, passing into the median elongate-hexagonal cells, basal cells longer; capsule erect or slightly inclined, prolate-spheroidal or ellipsoid; peristome double; lid conical, beak oblique; calyptra hood-shaped; a Sikkimese tree-moss.

(197′) *Section* **Complanaria** *of* **Porotrichum.**** p. 78.

324. Secondary stems irregularly dumosely branched; branches ascending to erect, closely spaced, densely and radially foliose; leaves when dry imbricate, ventrally moderately concave, ovate or ovate-oblong, shortly acuminate, margins reflexed; leaf-cells elongate-rhombic, the marginal and intra-marginal cells near the leaf-base subquadratic, gradually passing into the inner cells; seta short; capsule erect, ovoid to cylindric; lid arched conical, blunt; tree-mosses of tropical and subtropical mountainous regions.

(298′) **Rhegmatodon.**** p. 86.

— Branches regularly or irregularly pinnately disposed or verticillate 325

325. Leaves apparently bifarious, ovate-lanceolate, acuminate; midrib reaching up to the middle or to three-fourths of the leaf-blade; leaf-cells narrow-prosenchymatic, smooth, basal cells shorter, oblong; seta elongate, usually sinuous; capsule inclined to horizontal, monosymmetric, ellipsoidal to cylindric; lid arched-conical, beak long; ground- and stone-mosses of temperate and tropical regions.

(372′) *Species of* **Rhynchostegium.**** p. 96.

— Leaves radially disposed 326

326. Secondary stems prostrate or ascending, *either* regularly pinnately branched, the branches elongate and often arcuate, *or* sparsely branched or simple, the branches short; leaves when dry imbricate, when moist spreading, ovate, ovate-oblong, elliptic, rarely narrow-lanceolate; midrib extending beyond the middle of the leaf-blade, rarely projecting beyond the leaf-tip; leaf-cells with a broad- or narrow-elliptic lumen, smooth or finely papillose, basal cells near the midrib elongate to linear, at the leaf-corners rounded-quadratic or rhombic; capsule immersed, prolate-spheroidal to cylindric; peristome mostly double; lid conical, pointed; calyptra conical, margin crenulate; bark-mosses, sometimes on rocks and stones in tropical and subtropical regions.

(77′) **Cryphaea.** p. 66.

— Secondary stems or main branches erect or ascending 327

327. Midrib ending at some distance below the leaf-tip; rhizoids numerous, but not forming a dense felt; leaves ± spreading, often one-sided, ovate or elliptic, gradually long-acuminate, margins flat and quite entire; leaf-cells elongate-rhombic-hexagonal, rich in chloroplasts, basal cells rectangular; seta 5—8 mm. long, straight, dry twisted; capsule erect, prolate-spheroidal, after dehiscence urceolate; ring broad; peristome double, teeth paired, adherent at their tips, dry inflexed, wet reflexed; lid arched-conical, beak straight or oblique; calyptra hood-shaped; tree-mosses of temperate and of mountainous tropical regions.

(286′) **Anacamptodon.** p. 85.

— Midrib extending up to, or close to the leaf-tip . . 328
328. All or most of the leaf-cells smooth 329
— Leaf-cells with one or several papillae over the lumen . 330
329. Secondary stems close-set, elongate, often sinuous, at their upper end mostly curved, densely foliose from their very base, often giving rise to lateral, filiform, small-leaved flagella; leaves spreading to squarrose, stem-clasping, from an ovate or cordate-ovate basal part lanceolately acuminate, margins upwards minutely serrulate; midrib narrow; leaf-cells with an elliptic to linear lumen, at the leaf-base brown, at the leaf-corners laxly knitted; seta 5 mm. long and less, straight; capsule spheroidal to nearly spherical; lid conical, beaked; tree-mosses of Southern India and the Pacific Islands.

(138′) **Jaegerina stolonifera.**** p. 69

— Secondary stems somewhat remote, erect or ascending, rigid; leaves densely imbricate; leaf-cells rather thick-walled; leaves somewhat decurrent, cordate-ovate, acuminate; midrib valid; lumen of cells elliptic; capsule erect, cylindric; lid conical; bark- and stone-mosses.

(302′) *Subgenus* **Anomocladus** *of* **Leskea.**** p. 86.

330. Midrib valid; leaf-cells rounded-hexagonal or -quadratic, with one, sometimes with several papillae over the lumen, basal cells subquadratic, median cells rhombic; leaves when dry adpressed, when moist erecto-patent or spreading, somewhat decurrent, near their base with two short folds, margins near the base reflexed on one or both sides; capsule erect, cylindric; in moist, shady places on the ground, on tree-trunks, woodwork and stones.

(301′) *Subgenus* **Euleskea** *of* **Leskea.**** p. 86

Midrib narrow; leaf-cells oblong-elliptic, smooth or with several low papillae over the lumen, basal cells near the midrib more elongate, marginal cells often smooth; leaves when dry incurved, moist erecto-patent; stem-leaves broadly ovate-lanceolate or lanceolate-subulate, sometimes ending in a hair-point, margin usually flat, branch-leaves more shortly acuminate; seta up to 3 cm. in length; capsule inclined to horizontal, monosymmetric,

elongate-obovoid; peristome double; lid conical, beak long or short; ground-, tree- and rock-mosses of tropical and temperate regions.

(317′) **Claopodium.**** p. 88.

331. Alar cells clearly differentiated, rarely only a few of them developed 332
— No true alar cells differentiated, but intra-marginal and marginal and often also the basal cells or the cells at the leaf-corners different from the remainder . . . 347
332. Hydrophilous, growing in wet places on various substrata, on swampy meadows, in ditches, water-courses, sometimes fluitant or floating 333
— Mesophytic, growing on ordinary soil, on rocks and on tree-trunks 335
333. Stem prostrate, devoid of rhizoids, irregularly branched, branches ± elongate, simple, ± ramified or irregularly pinnate; leaves ovate, acuminate; midrib ending close to the leaf-tip or projecting beyond leaf-cells elongate-rhombic, more lax along the line of insertion of the leaves, at the leaf-corners hexagonal or oblong, along the margin linear, here forming a distinct seam; inhabitants of Sechwan.

(339′) **Sciaromiopsis.** p 92.

— Stem creeping, rhizoids rather scanty 334
334. Leaves lanceolate, gradually attenuated into a long and fine, sometimes capillary point; midrib of the stem-leaves ending between the middle of the leaf-blade and the leaf-tip, that of the branch-leaves sometimes shorter; leaf-cells prosenchymatic or linear; basal and alar cells shorter, rectangular, the marginal cells not forming a distinct seam; inhabitants of temperate regions.

(337′) **Leptodictyum.**** p. 91.

— Leaves suborbicular to broadly ovate, their breadth often exceeding their length; branch-leaves when dry closely imbricate, broadly obtuse, often ending in a minute apicule, alar area decurrent; midrib valid below, thinning out upwards, ending above the middle of the leaf-blade; leaf-cells rhombic, smooth, marginal cells quadratic, smaller, basal cells larger, alar cells numerous, small, subquadratic; seta up to 25 mm. long; capsule suberect,

prolate-spheroidal, slightly curved when dry; lid conical, beaked; on moist grassy meadows and on ground subject to periodical flooding, also found on soil-covered walls and rocks, in temperate and cold regions.

(369′) **Myuroclada concinna.** p. 96.

335. Leaves dissimilar, the dorsal leaves when dry adpressed, the lateral ones larger, usually spreading; stem beset with brown rhizoids, densely foliose: branches irregularly, furcately or pinnately disposed; leaves ovate- or oblong-lingulate, blunt or pointed, rarely ovate-lanceolate; leaf-cells rhombic to linear, alar cells square or transversely oblong; seta short or elongate; capsule mostly inclined or horizontal, ovoid, somewhat monosymmetric, short-necked; peristome double; lid conical, shortly pointed or obliquely beaked; on tree-trunks and rocks in tropical and subtropical regions.

(396′) **Stereophyllum.**** p. 100.

— Leaves uniform all round or the branches complanate and their leaves apparently bifarious 336

336. Alar cell-group clearly delimited, alar cells rounded-4—6-sided or nearly square, the inner and upper cells prosenchymatic or elongate-rhombic to linear 337

— Alar cells either not essentially differing in shape from the neighbouring cells except in colour or transparency, or quite gradually passing into them 341

337. Secondary stems stoloniferous; leaves, when dry laxly imbricate, ovate, elliptic, ovate-oblong or -lanceolate, acute or acuminate, upwards serrulate; inner and upper leaf-cells irregularly elongate-rhombic to linear, alar cells 4—6-sided or rounded-square; seta elongate; capsule erect to horizontal, prolate-spheroidal or monosymmetrically ellipsoidal; peristome double; lid conical, acute or ending in a short oblique beak; tree- and rock-mosses of temperate and tropical regions.

(210′) **Isothecium.**** p. 79.

— Secondary stems not stoloniferous 338

338. Alar cells scarcely broader than the neighbouring inner and upper leaf-cells, square, forming a triangular or triangular-sublanceolate alar group extending with its basal part up to, or close to the midrib, inner leaf-cells

elongate-rhombic or -hexagonal; midrib scarcely passing beyond the middle of the leaf-blade 339

— Alar cells forming *either* a well defined but small alar group ovate in outline, *or* the outer portion of a differentiated basal band, distinctly broader than the neighbouring inner and upper cells, square or short-rectangular . 340

339. Secondary stems foliose from their very base, simple or subpinnately or fasciculately branched; leaves laxly imbricate, narrowly ovate- or elliptic-lanceolate, ending in a subcapillary point, margin flat and quite entire; seta short, sinuous; capsule erect, subcylindric; capsule-ring not developed; peristome double; lid conical, blunt; in warmer temperate and in mountainous tropical regions.

(288′) **Juratzkaea.**** p. 85.

— Secondary stems beset at their lower part with rather distantly spaced, pale, thin, ovate-lanceolate hypophylls, higher up bearing a cluster of branches; branch-leaves when dry adpressed, moist erecto-patent, decurrent, ovate-oblong, ending in a short point, near their base narrowly recurved; alar cells chlorophyllose; seta about narrowly recurved; alar cells chlorophyllose; seta about 8 mm. long, straight; capsule elongate-cylindric; ring broad; endostome wanting; lid conical, beak oblique; tree-mosses of tropical and temperate regions.

(393′) **Leviercila.**** p. 100.

340. Alar cells forming a small well-defined group at the leaf-corners, rounded-square; inner and upper cells narrow prosenchymatic; branches irregularly or pinnately disposed; seta elongate; capsule inclined to horizontal, monosymmetric, ellipsoidal or cylindric; peristome double; lid arched-conical, beak long; ground- and stone-mosses of temperate, subtropical and tropical regions.

(372′) *Species of* **Rhynchostegium.**** p. 96.

— Alar cells forming the outer part of a narrow band of nearly isodiametric, irregularly polygonal cells; upper cells oblong-elliptic, somewhat prosenchymatic; main stem creeping, densely branched; branches ascending or erect, densely foliose, catkin-like, often

curved; branch-leaves, when dry adpressed, lanceolate or oblong, blunt or apiculate or shortly acuminate, margin recurved; midrib terminating near the middle of the leaf-blade; seta 1-2 cm. long, straight, red; capsule erect, prolate-spheroidal to cylindric; peristome double; lid conical, or ending in an oblique beak; mostly tree-mosses of subtropical mountainous regions.

(387′) **Rozea.**** p. 99.

341. Leaves obtuse, broadly elliptic, ventrally very concave; secondary stems erect, bearing hypophylls below, upwards dendroidly branched; alar cells only slightly differentiated, quadratic, brownish, the remaining cells narrowly rhombic at the upper part of the leaf-blade, linear lower down; midrib considerably exceeding the middle of the leaf-blade; seta long, straight; capsule erect, cylindric; peristome double; lid conical, beak long and thin; Formosa.

(208′) **Dolichomitra.** p. 79.

— Leaves acute or drawn out into a shorter or longer point . 342

342. Marginal parts of the leaves long and narrowly decurrent; main stem irregularly pinnately branched, main shoots upright and subdendroidly branched, later on bending downwards and becoming prostrate; leaves cordate-triangular, ovate-lanceolate; leaf-cells thick-walled, elongate-rhombic or -hexagonal, alar cells numerous, rectangular; midrib often dorsally protruding as a spinule; seta 8—15 mm. long, dark-red; capsule inclined to horizontal, monosymmetric, ellipsoidal to cylindric, ± curved; peristome double; lid conical, beak short and thick; on various substrata in temperate regions.

(366′) **Bryhnia.**** p. 96.

— Leaves only shortly or not at all decurrent . . . 343

343. Marginal leaf-cells transparent, elongate, forming a distinct seam, inner leaf-cells subelliptic, alar cells transparent, shortly oblong-subhexagonal, gradually passing into the chlorophyllose elongated subhexagonal inner basal cells, upper inner cells with one or several papillae; midrib ending close to the leaf-tip; secondary stems numerous, ascending, upwards pinnately or dendroidly branched; branches of unequal length; leaves when

dry loosely adpressed, tip twisted, when moist erecto-patent, stem-leaves ovate-lanceolate, gradually passing into the lanceolate-linear point, margins flat, serrate, branch-leaves more shortly acuminate; seta long, red, dry twisted; capsule inclined to suberect, monosymmetric, ellipsoid to cylindric; peristome double; lid conical, beak long and fine; ground- and tree-mosses of tropical and subtropical mountainous regions.

(122′) **Duthiella.**** p. 68.

— Marginal cells not differentiated so as to form a seam; inner leaf-cells elongate-rhombic to narrowly linear, smooth or pitted; midrib not extending beyond four-fifth of the length of the leaf-blade, mostly shorter . 344

344. Leaves broadly ovate, elliptic or ovate-oblong, *either* subabruptly attenuated into a comparatively short, narrowly lanceolate or long subcapillary often twisted or sinuous point, *or* acute, —*or* shortly acuminate . . . 345

— Leaves long-acuminate, ovate-lanceolate or ovate-subulate 346

345. Tree-mosses; primary stem creeping, bare or beset with hypophylls; secondary stems mostly horizontally spreading, sometimes decurved or pendent, irregularly branched or dendroid; leaves elliptic or ovate-elliptic; mostly shortly and narrowly acuminate, rarely subulate, upwards often incurved at the margins and hood-shaped; leaf-cells elongate-rhombic to narrowly linear, basal cells brownish, at the leaf-corners quadratic; seta ± elongate; capsule commonly ± projecting beyond the perichaetium, prolate-spheroidal; endostome rudimentary or absent; lid conical, beak short, often curved; mostly in tropical and subtropical forests.

(140′) **Pterobryopsis.**** p. 70.

— Ground- and rock-mosses; primary stem creeping or ascending; branches in clusters or pinnately disposed, ascending or erect; leaves ventrally very concave, bowl-shaped, from a ± decurrent base ovate or ovate-oblong, subabruptly attenuated into a narrowly lanceolate or capillary point; midrib one half to three-fourth of the length of the leaf-blade; leaf-cells narrow-prosenchymatic, basal cells shorter, at the leaf-corners quadratic or shortly rectangular, green, yellowish-green or colourless; seta elongate; capsule inclined to horizontal, ± curved, monosymmetric, ellipsoidal, rarely

erect and cylindric; peristome double; lid conical, mostly terminating in a beak; on rocks and rock-debris, exposed roots and the base of tree-trunks, on forest ground and shady meadows in temperate regions.

(367′) **Cirrhophyllum.**** p. 96.

346. Leaf-cells elongate-hexagonal, alar cells square or transversely oblong; midrib terminating about the middle of the leaf-blade; branches ± regularly pinnately disposed, short, erect or ascending, densely foliose; seta up to 9 mm. long, sinuous, yellowish-red; capsule erect, prolate-spheroidal, truncate; peristome double; lid cupola-shaped, beak oblique; tropical and subtropical tree-mosses.

(292′) **Schwetschkea.**** p. 85.

— Cells of the middle of the leaf-blade *either* partly short-parenchymatic, partly parenchymatically hexagonal, *or* partly prosenchymatically partly parenchymatically hexagonal, usually 2—4—6 times as long as broad, rarely comparatively longer; midrib ending at various distances from the leaf-base, sometimes extending close to or right up into the subulate point; seta elongate, when dry dextrorsely and sinistrorsely twisted, reddish or purple; capsule ellipsoid to cylindric, ± curved; peristome double; lid conical, blunt or acute; ground-, stone-, wood- and tree-mosses of temperate regions.

(339′) **Amblystegium.**** p. 92.

347. The marginal cells forming a well defined seam, consisting of several rows of cells 348

— The marginal cells not forming a seam or the seam obscure, an intra-marginal seam present or absent . . . 353

348. The marginal cells not markedly different in shape from the neighbouring inner cells; the lower cells linear-oblong, the upper oblong-elliptic; seam complete, consisting of several layers of yellowish-brown cells; midrib extending close to the leaf-tip; on rocks in water-courses in the Himalayas and Setchwan.

(194′) **Handeliobryum.**** p. 78.

— Marginal cells distinctly longer than the neighbouring inner cells 349

349. Leaves elliptic, elliptic-oblong, obovate or lingulate-subspatulate, shortly acuminate or rounded at the apex, in 6—8 rows, the dorsal and ventral leaves adpressed, the lateral ones larger and spreading ; primary stem creeping or prostrate to ascending or erect, at the base or higher up emitting red or brown rhizoids . . 350

— Leaves ovate-oblong, lanceolate, lanceolate-lingulate or lanceolate-linear, apex blunt, acute, acuminate or subulate 351

350. Leaves subspatulate-linguiform, terminating in a short and sharp point ; primary stem prostrate or obliquely ascending, apparently bifariously foliose ; leaf-seam broad and yellowish, at the leaf-tip contracted into a sharp point ; leaf-cells pentagonal or hexagonal, poor inch loroplasts, at the leaf-base reddish ; seta 3—5 mm. long, flexuous, upwards warty, purple ; capsule ovoid, inclined to horizontal ; lid hemispherical, beak subulate, curved ; calyptra conical, cap-shaped, nearly enveloping the capsule ; tree-mosses of the Indian Archipelago.

(226′) **Leskeodon.** p. 80.

— Leaves elliptic or obovate, rounded or shortly acuminate ; primary stem prostrate to suberect, dichaseally branched and apparently bifariously foliose ; leaf-seam usually complete, rarely obscure ; leaf-cells rounded-hexagonal rich in chloroplasts, basal cells more elongate or scarcely differentiated ; seta elongate, purple, rarely twisted ; capsule either erect and prolate-spheroidal or horizontal to pendent and monosymmetrically ellipsoidal ; peristome double ; lid arched-conical, beak straight ; calyptra conical, cap-shaped, glabrous or hairy, margin fringed ; on moist ground, rocks and tree-trunks in tropical and subtropical regions.

(227′) **Distichophyllum.**** p. 80.

351. Midrib ending at some distance from the leaf-tip ; marginal seams extending from base to apex, broader below, yellowish ; stem creeping or ascending, short(1—3 cm.), unbranched or upwards divided into short branches of equal length ; leaf-cells rhombic or elliptic, rarely rounded-hexagonal, smooth ; basal cells usually longer, along the line of insertion of the leaves brownish ; seta mostly 5—7 mm. long, geniculate at the base, red, dry twisted ; capsule erect and prolate-spheroidal, some-

times slightly inclined; endostome and exostome of the same length; lid arched-conical, beak straight, subulate; calyptra cap-shaped, margin fringed; mostly on the trunks and branches of trees in tropical and subtropical regions.

(222′) **Daltonia.**** p. 79.

— Midrib extending to the leaf-tip or projecting beyond it; stem elongate, creeping, branches numerous, mostly erect 352

352. Leaves lanceolate, not sheathing, carinate-induplicate, marginal seam consisting of a few rows of cells, extending up to about one-third of the length of the leaf-blade, hyaline; leaf-cells thick-walled, lumen roundish, basal cells somewhat longer; seta elongate: capsule cylindric; peristome absent or consisting of two narrow membranes; calyptra cap-shaped, short, lobulate, lobules narrow, ending considerably above the middle of the urn; chiefly bark-mosses, sometimes on rocks in tropical and subtropical region (Himalaya, Java).

(45′) **Micromitrium.**** p. 64.

— **Leaves** broadly lanceolate, sheath, marginal seam consisting near the base of 6-15 rows of cells, gradually decreasing upwards in width, one or two rows only reaching the leaf-tip, more rarely stopping short of it; leaf-cells of the upper part of the blade with a round lumen and papillose, those of the sheath nearly linear and, like the cells of the seam, hyaline; seta elongate; capsule cylindric; peristome mostly single; lid conical; calyptra hood-shaped, nearly completely enveloping the capsule; tropical bark-mosses.

(235′) **Thyridium.**** p. 32.

353. Leaves auricled 354

— Leaves not auricled or only obscurely so 356

354. Inner leaf-cells elliptic or elongate-rhombic, mostly with a papilla over the lumen, rarely smooth or with more than one papilla; secondary stems numerous; flexuously ascending or subpendent, ± irregularly pinnately branched; leaves broadly lanceolate, acuminate, crenate or serrate, longitudinally grooved, upwards often transversely wrinkled; leaf-cells elliptic or elongate-rhombic, basal cells longer and smooth; seta 3—11 mm. long;

capsule erect, spheriodal to nearly spherical; peristome double; lid conical, passing into a curved, oblique, short beak; calyptra conical, hood-shaped; tree-mosses of tropical and subtropical regions.

(120′) **Trachypodopsis.**** p. 68.

— Lumen of inner leaf-cells linear; leaves drawn out into a long and narrow point 355

355. Leaf-cells bearing papillae over the inner cell-walls; secondary stems numerous, erect to nearly pendent; leaves below subelliptic passing into a lanceolate, ± spreading upper part; seta up to 2 cm. long, minutely spinulose; capsule erect, shortly spheroidal; peristome double; lid conical, cap-shaped, hairy; tree-, rarely rock-mosses of tropical and subtropical regions.

(118′) **Trachypus.**** p. 67.

— Leaf-cells with a ± distinct papilla over the lumen; secondary stems 10—15 mm. long, sinuous, densely foliose, remotely branched; leaves passing rapidly from a broadly cordate, erect basal part into a squarrosely spreading, narrow, subulate, sharply serrate point; seta about 3 mm. long, smooth; capsule erect, ovoid; peristome double; lid conical, beak oblique; an inhabitant of Bhotan and Formosa.

(119′) **Pseudospiridentopsis horrida.**** p. 68.

356. Leaves *either* longitudinally strongly plicate or striate, *or* transversely wavy, *or* both 357

— Leaves even or obscurely or delicately plicate 362

357. Leaves transversely wavy or both plicate and wrinkled . 358

— Leaves longitudinally plicate or striate 359

358. Midrib ending close to the leaf-tip; leaves wrinkled, but not plicate, lanceolate, gradually acuminate, squarrosely spreading; secondary stems simple or upwards pinnately branched, branches simple or sparsely ramified; leaf-cells elliptic, at the leaf-corners smaller, irregularly quadratic or transversely elliptic; seta short; capsule erect, prolate-spheroidal; lid conical, beak long and oblique; calyptra hood-shaped; ground- and rock-mosses of the Indian Archipelago.

(114′) **Neolindbergia.** p. 67.

— Midrib ending about the middle of the leaf-blade; leaves both wrinkled and plicate, ovate or ovate-oblong, subabruptly lanceolate-subulate, imbricate and falcate; stem inflated-foliose, with uncinate ends, prostrate to erect; branches variously disposed, either short and thick, or longer, acute and arcuately decurved leaf-cells narrow-linear and vermiform, basal cells rectangular, at the leaf-corners numerous small, quadratic and polygonal, thick-walled; seta 2—5 cm. long, dry dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, ellipsoid to subcylindric; lid arched-conical, beak short and oblique; in mountainous temperate regions.

(478′) **Rhytidium.** p. 115.

359. Leaf-cells two to three times as long as broad, elongate-rhombic or -hexagonal, towards the leaf-tip somewhat shorter, elliptic-subrhombic, basal cells longer, alar cells roundish-square or -hexagonal, the upper cells with a papilla; primary stem prostrate to erect, with scanty rhizoids; secondary stems erect to prostrate, with remote clusters of rhizoids, irregularly pinnately branched; leaves of primary stem ovate-lanceolate, of secondary stems broadly cordate-ovate, somewhat suddenly contracted into a long and narrow acumen, branch-leaves ovate-lanceolate; on forest ground and rocks in Java and the Himalayas.

(121′) **Trachypodopsis declinata.**** p. 68.

— Leaf-cells 5—20 times as long as broad; clusters of rhizoids ± numerous 360

360. Leaves decurrent, broadly cordate-ovate or cordate-triangular, shortly and broadly or somewhat longer and narrowly acuminate; primary stem at intervals or entirely stoloniform; branches pinnately or dendroidly disposed or in clusters; paraphyllia confined to the branching of point of lateral shoots; midrib often projecting on the dorsal surface of the leaf-blade as a spinule; leaf-cells narrow-prosenchymatic; seta elongate; capsule inclined to horizontal; lid conical, beak long and fine; ground-, stone- and tree-mosses of temperate regions.

(378′) **Eurhynchium.**** p. 98.

— Leaves scarcely or not at all decurrent 361

361. Plants yellowish-green to dark-green; inner peristome slightly adhering to the outer; primary stem partly stoloniform and stoloniferous; secondary stems close-set, densely foliose, *either* short and erect, dry often curved, *or* longer and divided into clustered branches; leaves ovate-lanceolate, long-subulate; leaf-cells narrow-prosenchymatic, basal cells oblong-elliptic, yellow along the line of insertion of the leaves; seta elongate, purple, dry dextrorsely twisted; capsule erect, prolate-spheroidal; lid conical, beak short or long; tree- and rock-mosses of temperate and subtropical regions.

(354′) **Homalothecium.**** p. 94.

Plants green, brownish-green or greenish golden-yellow; endostome free from the exostome; primary stem partly stoloniform; secondary stems *either* short and erect *or* ascending and pinnately or fasciculately branched; leaves cordate-ovate, graduately lanceolately acuminate, margins upwards sharply serrate; seta elongate, red, dry twisted; capsule erect, cylindric, rarely inclined; lid conical, beak long; tree-mosses of tropical regions.

(355′) **Pleuropus.**** p. 94.

362. Midrib ending at some distance below the leaf-tip . . 363

— Midrib extending up to or beyond the leaf-tip or at least reaching up very close to it 376

363. Margins of leaves incurved or recurved 364

— Leaf-margins flat 366

364. Leaf-cells finely papillose, irregularly circular or elliptic, basal cells near the midrib sublinear, radiating outwards, cells at the leaf-corners roundish; leaves in 8 rows, ovate, usually shortly acuminate; midrib two thirds of the length of the leaf-blade; main stem creeping, bearing small hypophylls and scanty rhizoids; secondary stems ascending, rigids, 2—5 cm. long, upwards irregularly divided into densely foliose branches; capsule overtopped by the perichaetium, ovoid; endostome wanting; lid conical, shortly beaked; calyptra short, conically bell-shaped, papillose, margin crenulate, tree-mosses of tropical regions.

(76′) **Acrocryphaea.**** p. 66.

— Leaf-cells smooth; calyptra hood-shaped . . . 365

365. Secondary stems prostrate or ascending, ± pinnately branched; leaves elliptic, rapidly passing into the lanceolate upper part; leaf-cells broad- or narrow-elliptic, near the leaf-base sublinear, at the leaf-corners rounded-quadratic; seta very short; capsule overtopped by the perichaetium, subspherical; peristome double; calyptra oblique; mostly on trees in subtropical mountainous regions from Nepal to Yünnan and Setchwan.

(80′) **Sphaerothecielia.**** p. 66.

— Secondary stems upright, irregularly or pinnately branched, densely foliose; leaves ovate-oblong or ovate, shortly or narrowly acuminate; leaf-cells at the acumen and along the median zone ± irregularly prolate-elliptic, at the leaf-corners rounded-quadratic or transversely oblong, pluriseriate; midrib ending at the middle of the leaf-blade or somewhat above it; seta 2—5 mm. long; capsule prolate-spheroidal or ovoid-subcylindric; endostome wanting; calyptra hood-shaped, beset with erect hairs, rarely glabrous; on trees, rarely on rocks in subtropical and tropical regions.

(87′) **Forsstroemia.**** p. 66.

366. Growing in wet or swampy places or in flowing water . 367

— Growing on trees, rocks or on the ground in ± dry localities 368

367. Paraphyllia confined to the vicinity of the branching-off point of the lateral shoots; lid of capsule arched-conical, without a beak; plant-mass bright-, yellowish- or brownish-green, often variegated with golden-yellow or red; leaves triangularly ovate-oblong, or broadly ovate or suborbicular, either shortly and narrowly acuminate or abruptly attenuated into a long, unilateral or falcate, channelled apical part; midrib exceeding the middle of the broad part of the leaf-blade, simple or unequally bifid; leaf-cells narrow-linear, vermiform, mostly ending bluntly, at the narrow upper part of the leaf-blade shorter and rhombic, at the leaf-base yellow or orange, at the leaf-corners quadratic or rectangular, either tinted or hyaline; seta 15—30 mm. long, dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, monosymmetric, curved, elongate-obovoid or cylindric;

peristome double; on wet and submerged walls, stones, rocks, woodwork and on tree-trunks at the edge of water-courses in temperate regions.

(344′) *Species of* **Hygrohypnum.**** p. 92.

— Paraphyllia entirely absent; lid of capsule arched-conical, ending in a long and stout, somewhat oblique beak; plant-mass yellowish- or blackish-green; leaves broadly ovate or elliptic-oblong, obtuse or shortly and acutely acuminate; midrib one half to three-fourths of the length of the leaf-blade; leaf-cells prosenchymatic, elongate-rhombic to linear, ± sinuous; midrib thinning out upwards, entire or shortly bifid; seta elongate; capsule inclined, monosymmetrically ovoid; peristome double; on wet rocks near waterfalls, on wet walls and woodwork, in wells, on stones in running water, in temperate, subtropical and tropical regions.

(346′) **Platyhypnidium.**** p. 93.

368. Leaves of the secondary stems and the branches, at least the upper ones, ovate, lingulate or subspatulate, sometimes suborbicular, rounded or subtruncate and apiculate at the apex; primary stem creeping, bare or beset with small hypophylls 369

— Leaves ovate and acute, or ovate-lanceolate, or gradually or abruptly acuminate 373

369. Secondary stems furcately or irregularly, rarely subpinnately branched; primary stem often stoloniferous; close-set, in four rows, conspicuously bifarious; leaves leaf-cells small, rhombic or rhombic-subhexagonal, the lower cells, at least along a median zone, elongate, rarely all of them linear; seta elongate; capsule erect or inclined, prolate-spheroidal, ellipsoid or cylindric; peristome double; lid conical, beak oblique; tree-, rock- and stone-mosses of temperate regions.

(192′) **Homalia.**** p. 77.

— Secondary stems ± conspicuously dendroidly or frondosely branched 370

370. Hypophylls of secondary stems spreading, gradually passing into the upper stem-leaves 371

— Hypophylls of secondary stems adpressed . . . 372

371. Leaves broadly ovate-lingulate, at their lower part one-sidedly reflexed, apex rounded, apiculate, irregularly crenulate-dentate; upper leaf-cells irregularly roundish-tetragonal to- hexagonal, at the middle part of the blade relatively longer (2 : 1), basal cells more elongate; seta 4-5 mm. long, upwards curved, light-yellow; capsule inclined, subcylindric; peristome double; lid hemispherical, beak obliquely curved; on the trunks and branches of trees in tropical and subtropical regions.

(195′) **Pinnatella mucronata.** p. 78.

— Leaves ovate-oblong, apex broadly acute, irregularly and acutely serrate; upper leaf-cells broadly rhombic, lower cells elongate-hexagonal, basal cells longer; seta elongate, exceeding 5 mm.; capsule erect or slightly inclined, ellipsoidal; peristome double; lid conical, beak oblique; a tree-moss of Sikkim.

(198′) **Porotrichum fruticosum.**** p. 78.

372. Hypophylls lanceolate, passing gradually into the ordinary, bifarious or radiately disposed upper stem-leaves; secondary stems frondosely branched; upper leaf-cells rounded-quadratic or rhombic, basal cells larger, cells at the leaf-corners rectangular-oblong, elliptic or quadratic; seta 2-3 mm. long; capsule erect or slightly inclined, subcylindric; peristome double; lid arched conical, beak oblique; tropical and subtropical bark-mosses.

(190′) **Homaliodendron.**** p. 76.

— Hypophylls ovate, abruptly acuminate; leaves commonly transversely undulate, shallowly longitudinally plicate to irregularly rugose, either laxly radiately disposed or the dorsal and ventral leaves ± adpressed, the lateral ones spreading; leaf-cells translucent, the lower broadly rhombic or elliptic, the upper irregularly roundish-quadratic; branches sometimes produced into flagella; seta 1·5—4 mm. long; capsule erect, ovoid or ellipsoidal; peristome double; lid conical, beak long, oblique; tree-mosses of tropical mountainous regions.

(189′) **Himantocladium.**** p. 76.

373. Most of the leaf-cells less than twice as long as broad, suborbicular, rounded hexagonal, elliptic or rhombic; midrib always ending within the leaf-blade; secondary stem- and branch-leaves subsimilar in shape; capsule straight 374

— Leaf-cells more than twice as long as broad, prosenchymatic, smooth; upper end of the midrib commonly protruding dorsally as a spinule; stem- and branch-leaves commonly differentiated, sometimes markedly differing only in size, margins serrulate 375

374. Primary stem densely foliose; branches elongate, simple or irregularly pinnately ramified; leaf-cells as long as, or only little longer than broad, with or without papillae over the lumen; marginal cells smaller, square or transversely oblong, at the leaf-base similar, pluriseriate; leaf-tip sometimes obscurely denticulate; seta 5—10 mm. long; capsule erect, spheroidal-subcyclindric, rarely slightly curved; peristome double; lid short-conical, blunt, tree-mosses of temperate regions.

(299′) **Lindbergia.**** p. 86.

— Primary stem beset with hypophylls; secondary stems subdendroidly branched, branches decurved; leaves ovate, acute, upwards irregularly serrate; leaf-cells pellucid, smooth; seta elongate; capsule cylindric; lid conical; N. W. Himalaya.

(315′) **Anomodon** acutifolius.** p. 87.

375. Leaves shortly or obscurely decurrent, slightly or not at all ventrally concave, ovate or rounded-triangular, gradually acuminate, never longitudinally plicate; leaf-cells narrowly prosenchymatic; seta elongate capsule; ± inclined to horizontal, ovoid-subcylindric; lid arched-conical, beak long and oblique; ground- and stone-mosses of moist and shady localities, mostly in temperate, sometimes in tropical regions.

(377′) **Oxyrrhynchium.** p. 97.

— Leaves decurrent, ventrally deeply concave, cochleariform, cordate-ovate or -triangular, somewhat abruptly terminating in a short and broad or somewhat longer and finer point, even, but more often distinctly longitudinally plicate; capsule long-ellipsoid or ovoid-subcylindric;

lid conical, beak long and fine; ground-, stone- and tree-mosses of temperate regions.

(378′) **Eurhynchium.**** p. 98.

376. Leaves with an intramarginal seam of elongated cells in several rows extending for some distance from the base upwards, inner cells and the cells at and close to the margin much smaller and roundish; secondary stems frondosely branched; capsule small, ovoid; lid conical, shortly and obliquely beaked; bark- and rock-mosses of tropical regions.

(196′) *Section* **Urocladium** *of* **Pinnatella.**** p. 78.

— Leaves without an intramarginal seam 577

377. Branches dendroidly or frondosely disposed, the secondary stems or primary branches resembling miniature cycadaceous or coniferous trees or fern-fronds or intricately branched shrubs 378

— Branches erect or ascending rising from a creeping primary stem, commonly, irregularly or subregularly pinnately, but not dendroidly, dumosely or frondosely disposed . 380

378. Leaves from a broadly ovate-deltoid basal part subabruptly attenuated into a narrow-lanceolate or lanceolate-subulate point; stem- and branch-leaves usually differentiated, rarely subsimilar; leaf-cells irregularly elliptic-oblong to linear, both dorsally and ventrally with a papilla over the lumen, rarely nearly smooth; seta very short; capsule erect, spherical; peristome double; lid conical, beak short and oblique; tropical and subtropical tree-mosses.

(117′) **Diaphanodon.**** p. 67.

— Leaves oblong, oblong-elliptic, ovate-oblong or broadly ovate-lanceolate, subobtuse, acute or shortly lingulate at the apex, those of the secondary stems and the branches subsimilar; most of the leaf-cells rounded-hexagonal or -rhombic 379

379. Secondary stems conspicuously dendroidly, pinnately or bipinnately branched, in the latter case often strikingly resembling miniature fern-fronds, usually standing out horizontally at right angles to the stems or branches of the hosts; leaf-cells either with a small papilla over

the lumen or smooth ; seta 3—5-mm. long, rough ; mostly tree-, rarely ground- or rock-mosses of tropical regions.

(195′) *Species of* **Pinnatella.**** p. 78.

Secondary stems somewhat laxly and irregularly dendroidly branched, erect or ascending ; leaf-cells smooth ; seta up to 15 mm. in length, smooth ; leaves ovate-oblong to ovate-lanceolate, upwards dentate, apex rounded or acute ; leaf-cells roundish, 4—6-sided, elliptic or rhombic, the basal cells longer ; capsule mostly horizontal to pendent, monosymmetrically ellipsoidal, rarely erect and prolate-spheroidal ; peristome double ; lid conical, beak oblique ; calyptra hood-shaped, glabrous ; usually found on wet ground, in shady glens near water-courses, springs and waterfalls or an constantly wet rocks, very rarely pendent or fluitant, in temperate and in mountainous subtropical and tropical regions.

(200′) **Thamnium.**** p. 78.

380. Branchlets when dry suborbicularly decurved ; primary stem stoloniform and stoloniferous, sinuous, emitting clusters of rhizoids and giving rise to clustered or pinnately disposed branches ; leaf-cells square or short-rhombic, extending from the leaf-corners inwards and upwards, ± elliptic at the middle region of the leaf-blade and towards the leaf-tip ; seta 10—15 mm. long, purple, smooth ; capsule inclined, monosymmetrically ellipsoidal ; peristome double ; lid arched-conical, beak oblique, curved ; ground-moss of temperate and warmer regions.

(351′) **Scorpiurium.** p. 94.

— Branches and branchlets straight or only moderately curved or flexuous 381

381. Main stem beset with a felt of brown or red rhizoids . 382

— Main stem not felty, mostly emitting at intervals clusters of (yellowish-red) rhizoids or the rhizoids scanty . . 384

382. Main stem short, rhizomatoid ; secondary stems and branches densely foliose, the stems upwards sparsely or ± densely branched, branches and branchlets straight or curved ; leaves from an elliptic, semisheathing base gradually attenuated into a long and narrow subulate point ; leaf-cells roundish, 4—6-sided, at the leaf-base

longer and with a linear lumen; seta elongate; capsule cylindric, straight; endostome wanting; lid conical, beak curved; tree-mosses of the Indian Archipelago.

(99) **Bescherellea.** p. 66.

— Main stem elongate 383

383. Calyptra longitudinally pluriplicate, conically bell-shaped, entire or rarely split open on one side, usually entirely enveloping the capsule, smooth or hairy, margin lobulate; branches erect or ascending, simple or divided into clustered branchlets, often close-set and arranged in single or double rows; leaves even or undulate, sometimes twisted on to the stem, broadly or narrowly lanceolate, acute or more commonly drawn out into a short or long point; leaf-cells roundish-quadratic or -hexagonal, papillose or smooth, basal cells longer, with narrow lumen; seta mostly elongate, sometimes very short; capsule erect, subspherical to prolate-spheroidal; peristome double, single or absent; lid conical, beak erect and fine; predominately tree-mosses of tropical and subtropical regions.

(28′) **Macromitrium.**** p. 62.

— Calyptra never plicate, conically bell-shaped, mostly glabrous, usually enveloping the capsule, margin lobed; branches erect or ascending, usually shortly ramified, densely foliose, below covered with a felt of rhizoids; leaves mostly elongate-lingulate, sometimes oblong; ending in a short or long point, often twisted round the axis; leaf-cells suborbicular, elliptic or rhombic, at the leaf-base more elongate to linear; seta straight or curved, sometimes very short; capsule erect, ovoid to cylindric; peristome double; lid cupola-shaped, beak subulate; tree- and rock-mosses of tropical and subtropical regions.

(46′) **Schlotheimia.**** p. 64.

384. Leaf-cells projecting dorsally at their corners as papillae, translucent, slightly differing in size and shape from each other, most of them elliptic or subhexagonal, at the leaf-corners quadratic; seta 15-25 mm. long, red; capsule inclined, cylindric; peristome double; lid arched-conical, acute; rock- and tree-mosses of temperate, subtropical and tropical regions.

(320′) *Species of* **Haplocladium.**** p. 88.

— Leaf-cells smooth or with one or several papillae over the lumen 385

385. Main stem stoloniform, bearing pale hypophylls much smaller than the 5-seriate branch-leaves; secondary stems commonly producing stolons at their base; leaves broadly ovate or ovate-oblong, upwards lingulate, lanceolate or subulate; leaf-cells rounded-hexagonal, both dorsally and ventrally papillose over the lumen, chlorophyllose, at the leaf-base near the midrib longer and smooth; seta ± elongate; capsule erect, prolate-spheroidal to cylindric; peristome double; lid conical, blunt, acute or beaked; rock- and tree-mosses of temperate hilly and mountainous regions.

(313′) **Anomodon.**** p. 87.

— Main stem, at least when young, densely foliose, its leaves similar to the branch-leaves 386

386. Leaves from a cordate-ovate or ovate-oblong base rapidly attenuated into a long and narrow point, margin of the subulate point flat and entire; main stem extensively creeping; branches erect; leaf-cells smooth, rounded-hexagonal, along the middle zone of the leaf-blade elliptic to oblong, at the leaf-corners square; seta elongate; capsule erect, straight, rarely slightly curved, prolate-spheroidal to cylindric; peristome double; lid shortly arched-conical, beak short and thick, somewhat oblique; on trees, calcareous rocks and on walls in temperate regions.

(302′) **Leskeella.**** p. 86.

— Leaves cordate-ovate or oblong-elliptic, shortly acuminate, apex acute or blunt 387

387. Margins of leaves quite entire or very rarely obscurely serrulate near the tip; primary branches short, erect, sometimes producing secondary branhes bearing much smaller leaves; flagella not developed; leaf-cells with one or several papillae or smooth, either thin-walled, rhombic-subhexagonal or irregularly elliptic, at the leaf-base quadratic, along the median zone subrhombic (*Euleskea*), or ± thick-walled, lumen elliptic or elongate (*Anomocladus*); seta elongate; capsule erect, prolate-spheroidal to subcylindric; lid long-conical; on tree-trunks, walls, roofs; in moist and shady situations on

various substrata, mostly in temperate, more rarely in tropical mountainous regions.

(301′) **Leskea.**** p. 86.

— Leaves finely serrulate near the apex; primary branches ascending, often closely spaced and divergent, simple or sparsely branched; flagella frequently present; leaf-cells small, finely papillose to nearly smooth, subelliptic or shortly rectangular-oblong, near the midrib relatively larger, at the leaf-corners nearly square or transversely oblong; seta elongate; capsule suberect, inclined to horizontal, irregularly subcylindric, curved; peristome double; lid conical, apiculate or lightly beaked; at the foot of tree-trunks and on wet rocks in tropical and subtropical regions.

(307′) **Pseudoleskeopsis.**** p. 87.

388. Laminar cells all essentially similar to each other, marginal cells sometimes relatively longer and the cells at the leaf-base and the leaf-corners slightly differentiated . 389
— Alar cells or a group of cells at the leaf-corners, often also the basal cells and the cells along the leaf-margins differentiated from the inner and upper cells . . 415

389. Leaf-cells short-elliptic, rounded-elliptic or rounded-subhexagonal 390
— Leaf-cells elongate-rhombic, elongate-hexagonal, to narrow linear 394

390. Leaves similar to each other 391
— Leaves dimorphic 393

391. Leaves broadly ovate, subabruptly and narrowly long-acuminate; leaf-cells small, thin-walled, rounded-subhexagonal or short-rhombic, at the leaf-base square to transversely oblong; seta long, twisted; capsule somewhat inclined, cylindric; peristome double; lid conical, beak short and oblique; calyptra hood-shaped; on roofs and walls, rarely on tree-trunks in temperate regions.

(304′) **Pseudoleskeella tectorum.** p. 86.

— Leaves suborbicular, ovate or ovate-oblong, obtuse, acute or shortly apiculate 392

392. Leaf-cells irregularly rhombic or broadly elliptic, the upper cells rhombic-subhexagonal, basal cells quadratic

or short-rectangular, quite smooth or the cell-corners protruding papillarly; leaf-margins denticulate or serrulate; seta 1-2 cm. long, when dry twisted; capsule erect, when empty slightly inclined, urn prolate-spheroidal, truncate; endostome and exostome of the same length; lid short-conical, yellowish-green, blunt or ending in a wart; calyptra small, hood-shaped, fugacious; stem ascending to erect, rooting by means of clusters of rhizoids placed at intervals irregularly furcately branched; on humous soil, on damp non-calcareous rocks and in rock-clefts, particularly in alpine regions.

(280′) **Myurella.**** p. 84.

— Leaf-cells elliptic or rounded-hexagonal, at the leaf-corners quadratic or transversely oblong, marginal cells smaller, quadratic, basal cells in several series, quadratic or transversely oblong; branches erect, radially and densely foliose; leaves broadly ovate or elliptic, acute or blunt; leaf-cells smooth; seta scarcely more than 0·3 mm. long; capsule erect, prolate-spheroidal; ring broad; peristome absent; lid short-conical, pointed; calyptra cap-shaped, plicate, margin lobulate; tropical and subtropical tree-mosses.

(3′) *Section* **Leptocalpe** *of* **Erpodium.**** p. 59.

393. Dorsal leaves asymmetric, ovate-oblong, blunt or ending in a hyaline point, ventral leaves symmetric, lanceolate; leaf-cells roundish, papillose; seta 1-1·5 mm. long; capsule erect, prolate-spheroidal to cylindric; peristome absent; lid cupola-shaped or conical, apiculate or very shortly beaked; calyptra reaching below the neck; mostly bark-, rarely rock-mosses of subtropical and tropical regions.

(4′) *Section* **Euaulacopilum** *of* **Aulacopilum.**** p. 60.

— Leaves in 4 rows, 2 dorsal and 2 ventral, dorsal leaves larger, broadly elliptic, at the apex semicircularly rounded, ventral leaves oblong, apex rounded; seta 0·3-1 mm. long; capsule prolate-spheroidal to subcylindric; peristome wanting; lid cupola-shaped; calyptra hood-shaped, covering only the upper part of the urn, margin entire; bark-moss of tropical regions.

(5′) **Solmsiella ceylonica.**** p. 60.

394. Branches dimorphic, *partly* rather flat, the leaves disposed bifariously and spreading, *partly* more densely foliose and less flat, the caudate ends of the shoots bearing numerous broad-filaments and suberect, long- and narrow-pointed leaves; leaf-cells linear, dorsally often spinously protruding at their upper ends, one or two basal rows of cells more laxly knitted; calyptra upwards densely beset with stiff hairs; found in Borneo.

(261′) **Dimorphocladon bornense.** p. 83.

— All branches similar 395

395. Branch-leaves dimorphic, the lateral leaves differentiated from the dorsal and ventral leaves in shape, size or the degree of divergence 396

— All branch-leaves similar, the pinnule-leaves similar to, or different from the branch-leaves 399

396. Leaf-cells with a papilla at their upper end over the inner cell-wall, rarely over the lumen, rhombic-sublinear; branch-leaves not essentially differing from each other in size, elliptic-oblong or -lingulate, rounded or subobtuse at the apex, dorsal and ventral leaves subsymmetric, ± adpressed, lateral leaves asymmetric, spreading; capsule inclined, monosymmetric, short-ovoid; lid conical, beak short; calyptra fugacious, hood-shaped; mostly on wet rocks and stones in tropical regions.

(443′) *Species of* **Glossadelphus.**** p. 108.

— Leaf-cells smooth or pitted 397

397. Leaves longitudinally furrowed or transversely wavy or, when wet, wrinkled, in 8 rows, oblong or ovate-oblong, ending in a narrow and short lanceolate point, dorsal and ventral leaves ± adpressed, lateral leaves spreading, narrow, asymmetric; leaf-cells thick-walled, narrowly elliptic to linear; secondary stems irregularly branched, lycopodioid; seta short; capsule prolate-spheroidal; peristome double; lid shortly beaked; calyptra conical, cap-shaped, margin lobulate; tropical bark-mosses.

(133′) *Species of* **Garovaglia.**** p. 69.

— Leaves neither furrowed, nor wavy, nor wrinkled . . 398

398. Leaf-cells narrow-prosenchymatic, smooth, shorter and yellowish along the line of insertion of the leaves; dorsal and ventral leaves subsymmetric, obliquely adpressed

alternately on the right and left, lateral leaves bifariously spreading, asymmetric, elliptic-lanceolate; seta about 1 cm. long; capsule suberect, subcylindric, 8-ribbed or 8-grooved; peristome double, lid cupola-shaped, beak long and oblique; calyptra hood-shaped, margin lobulate; primary stem short, covered with a dense felt of brown rhizoids; tropical bark- and leaf-mosses.

(103′) **Hampeella.** p. 67.

— Leaf-cells elliptic to elongate-rhombic subhexagonal, smooth, along the leaf-margin somewhat larger and forming an indistinct seam; dorsal and ventral leaves much smaller, lateral leaves spreading, shortly or subulately acuminate or ending in a hair-point; seta 10—25 mm. long; capsule horizontal to pendent, ovoid or subspheroidal; peristome double; lid cupola-shaped or conical, mostly apiculate or with a short beak; calyptra hood-shaped; tropical and subtropical ground-, rock- and tree-mosses.

(463′) **Vesicularia.**** p. 113.

399. *Either* the branch-leaves differing from the stem-leaves *or* stem- and branch-leaves similar to each other, but the pinnule-leaves differing from them . . 400

— Branch-, stem- and pinnule-leaves subsimilar or the stem bearing hypophylls only 407

400. Branch-leaves suborbicular, broadly ovate, ovate-oblong or ovate spatulate, sometimes linear-oblong, commonly ending in a short acumen 401

— Branch-leaves ovate- or oblong-lanceolate or -subulate . 404

401. Secondary stems upwards dendroidly branched; stem-leaves mostly squarrose, broadly ovate or cordate-ovate, shortly acuminate; branch-leaves much smaller than the stem-leaves, broadly ovate or ovate-oblong or ovate-spatulate; leaf-cells rhombic-sublinear to elliptic, usually with a papilla at the upper cell-corner, cells shorter at the leaf-base; seta up to 6 cm. in length; capsule usually inclined or pendent, elongate-ovoid to short-cylindric; lid discoid or low cupola-shaped, apiculate; calyptra hood-spaped, smooth; on forest ground in tropical and subtropical regions.

(485′) **Macrothamnium.**** p. 116.

— Branches pinnately disposed 402

402. Leaf-cells elongate- to linear-prosenchymatic, papillose or the cell-corners papillarly protruding, rarely smooth, basal cells shorter and laxly knitted; *either* stem- and branch-leaves differentiated *or* not differentiated from each other, but the pinnule-leaves differing from either; branch-leaves ovate or oblong, gradually or abruptly short-acuminate; midribs two, short and thin; seta 5-10 (—30) mm. long; capsule suberect to inclined, ovoid to cylindric; peristome double; lid cupola-shaped, beak long, ± curved; calyptra hood-shaped or conically cap-shaped, spinulose, often ciliate; on trunks, branches and leaves of trees in tropical and subtropical regions.

(257′) **Chaetomitrium.**** p. 82.

— Leaf-cells elongate-rhombic, length : breadth :: 4-6-8 : 1; upper cell-corners papillarly protruding; primary stem up to 13 cm. long 403

403. Branches densely foliose, pinnately or bipinnately disposed, 5-15 cm. long; primary stem when young laxly foliose, when old defoliated; stem-leaves broadly elliptic, upper part squarrosely recurved; branch-leaves suborbicular, shortly and broadly acuminate; pinnule-leaves suborbicular, upwards denticulate; seta 2-3 cm. long, uncinate; capsule pendent, elongate-ovoid; peristome double; lid cupola-shaped, apiculate; creeping along the branches and twigs of tropical trees.

(260′) **Chaetomitriopsis.**** p. 82.

— Branches laxly foliose, 2-7 mm. long, irregularly pinnately disposed; primary stem stoloniform; stem-leaves half-stem clasping, broadly elliptic, at their middle passing into a subulate, squarrosely recurved point; branch-leaves broadly elliptic to suborbicular, abruptly contracted into a short-lanceolate point, horizontally divergent, serrulate; seta 6-7 mm. long; capsule erect, ovoid, truncate; peristome double; lid low, cupola-shaped, beak oblique; bark-moss of the Indian Archipelago.

(470′) **Rhizohypnella.** p. 115.

404. Branches unilaterally disposed, short, plumosely foliose; stem-leaves partly hypophylloid, partly broadly lanceo-

late, subflexuose; branch-leaves distichously spreading, oblong-lanceolate, acuminate; leaf-cells narrowly rhombic-sublinear, basal cells wider, the supra-basal cells both dorsally and ventrally with small papillae at their corners over the inner cell-walls; seta 5-6 mm. long, straight; capsule erect or slightly inclined, elongate-ovoid; peristome double; lid cupola-shaped, beaked; bark-mosses of Java.

(467′) **Ctenidiadelphus.** p. 114.

— Branches pinnately disposed 405

405. Branch-leaves acute or abruptly or subabruptly contracted into a short lanceolate or subulate point; leaf-cells papillose or nearly smooth; growing on the trunks and branches of trees in tropical and subtropical regions.

(257′) *Species of* **Chaetomitrium.**** p. 82.

— Branch-leaves gradually attenuated from an ovate or elliptical base into a long- and narrow-acuminate point . 406

406. Point of branch-leaves fine and flexuous; stem-leaves recurved, half-stemclasping, ending in a narrowly subulate flexuous hair-point; leaf-cells elongate-rhombic, dorsally here and there papillarly protruding at the cell-corners; seta straight, up to 6 mm. long, red, smooth; capsule erect or slightly inclined, prolate-ovoid; endostome wanting; lid short-conical, beak short and oblique; tropical bark-moss.

(466′) **Microctenidium Leveilleanum.** p. 114.

— Aeumen of branch-leaves ± falcately bent; stem-leaves broadly elliptic-oblong, asymmetric, in some species ± abruptly drawn out into a comparatively short, curved or twisted point; leaf-cells elongate-rhombic, smooth, rich in chloroplasts; seta 1-2 cm. long, uncinate; capsule inclined to pendent, small, ovoid; lid cupola-shaped, beaked; peristome double; on the bark of trees, also on calcareous ground, on stones and walls in tropical muntainous regions.

(458′) *Subgenus* **Ectropothecidium** *of* **Ectropothecium.**** p. 110.

407. Leaves bifarious; branches finally prostrate . . . 408
— Leaves radially disposed 410

408. Leaves induplicate, cymbiform, linear-oblong, blunt or shortly pointed; leaf-cells parenchymatic, smooth; primary stem thin, creeping, bearing hypophylls; secondary stems creeping, closely pinnately branched; seta very short; capsule erect, ovoid or obovoid; endostome absent; lid conical, beak short and straight; calyptra bell-shaped, hairy; brood-bodies cauline, filiform or spindle-shaped; on the bark and branches of trees in the Tropics.

(177′) **Orthorrhynchium.**** p. 74.

— Leaves ventrally concave, not cymbiform, ovate-oblong or ovate-lanceolate, acuminate; main stem closely or ± remotely foliose; seta about 1 cm. long . . . 409

409. Branches irregularly bilaterally disposed; leaves ovate-oblong, short or long-acuminate; leaf-cells subrhombic-linear, either smooth or punctate-papillose over the outer edges of the inner cell-walls; seta about 1 cm. long; capsule erect to horizontal, prolate-ellipsoidal; peristome double; lid ending in a rather long beak; calyptra hood-shaped; ground and bark-mosses mostly of tropical and subtropical regions.

(462′) **Taxiphyllum.**** p. 113.

— Branches unilaterally disposed; leaves ovate-lanceolate, drawn out into a rather long and fine point; leaf-cells parenchymatically rhombic, with a row of papillae over the outer edges of the inner cell-walls; seta about 1 cm. long; capsule erect, prolate-spheroidal; peristome single (?); lid conical, beak very short and straight; tropical bark-rarely ground-mosses.

(459[1]) **Ectropothecium.**** p. 111.

410. Leaves with a basal narrow band of yellowish-red, orange or rust-brown cells 411

— Basal cells green or colourless 412

411. Plant-mass golden yellow or-brown, or brilliant green or olive green, sometimes reddish; primary stem prostrate, irregularly branched, often stoloniform, emitting, like the branches, clusters of rhizoids; leaves erecto patent, often one sided, lanceolate subulate or oblong elliptic, also ovate lanceolate, and shortly acuminate; leaf-cells narrow linear; seta long and straight; capsule erect or slightly inclined, elongate-ellipsoid; peristome double;

lid conical, blunt or ending in a short stout beak; mostly on calcareous rocks and rock-debris in mountainous temperate regions.

(386′) **Orthothecium.**** p. 98. *

— Plant-mass yellowish or bright-green; primary stem prostrate, ascending or erect, rhizoids absent or only emitted from the upper ends of stem and branches; leaves ovate or cordate-ovate, ± long-acuminate, upwards squarrosely divergent or recurved; leaf-cells narrow-linear; seta 25—60 mm. long; capsule horizontal to pendent, obovoid; peristome double; lid short-conical, acute; on forest and meadow ground in temperate regions.

(479′) **Rhytidiadelphus.**** p. 115.

412. Leaves oblong- or ovate-lingulate, apex usually rounded or subtruncate (rarely acuminate), denticulate, coarsely dentate or crenate; leaf-cells rhombic-sublinear, their upper corners ± papillarly protruding or one or several papillae over the lumen; seta 6—25 mm. long; capsule inclined, ovoid, curved; lid elongate-conical, shortly pointed; peristome double; calyptra hood-shaped; mostly in wet places on rocks and stones in the Tropics and Subtropics.

(443′) *Species of* **Glossadelphus.**** p. 108.

— Leaves lanceolate, or elliptic-oblong and slightly drawn out into a narrow, comparatively short point . . . 413

413. Leaves longitudinally plicate, ovate-lanceolate or elliptic-oblong, usually spreading or squarrose, margins mostly recurved; leaf-cells linear or elongate-rhombic; secondary stems ascending simple or irregularly branched; seta short; capsule erect, ovoid-subcylindric; lid conical, beak oblique; calyptra hood-shaped, tree-mosses of tropical regions.

(131′) *Species of* **Endotrichella.**** p. 69.

— Leaves, at least when wet, not plicate 414

[414. Plants densely interwoven, plant-mass green or dirty-yellowish-green; leaves spreading, straight or slightly falcate, elliptic-lanceolate, attenuated into a subulate, sometimes flexuose point; margin entire or the point of the leaf obscurely denticulate; leaf-cells elongate-

rhombic, 6—10 times as long as brood; seta uncinate; capsule nodding, small ovoid or subspheroidal, minutely mamillose; lid cupola-shaped, beak short and straight; on calcareous substrata, more rarely on the bark of trees, in tropical regions.

(458′) **Trachythecium.**** p. 111.

— Plant-mass loose, brilliant to pale-green, stem irregularly branched; leaves lanceolate, erecto-patent below, upwards squarrosely divergent or recurved, remotely serrate, gradually acuminate, sometimes ending in a hair-point; leaf-cells rhombic-sublinear, 10—15 times as long as broad, shorter along the line of insertion of the leaves, seta 15—25 mm. long, sinuous; capsule inclined, monosymmetric, subcylindric; lid obtusely conical, umbilicate; on rotting tree-trunks, decaying wood and humous forest ground in temperate regions.

(465′) **Dolichotheca.**** p. 114.

415. Alar cells not differentiated, but a group of cells at the leaf-corners, often also the basal and part of the marginal cells differentiated from the inner and upper cells . . 416
— Alar cells clearly differentiated 444
416. Primary stem very short, rhizomatoid, usually covered with a dense felt of brown rhizoids; secondary stems close-set, ascending, ± elongate, lycopodioid; leaves oblong or ovate-oblong, ending in a narrow and short lanceolate point, mostly deeply longitudinally furrowed, more rarely transversely undulate or wrinkled, very rarely even, in 8 rows, rarely uniformly disposed all round, usually the dorsal and ventral leaves ± adpressed, the lateral leaves asymmetric and spreading; leaf-cells thick-walled, narrowly elliptic or linear, coloured along the line of insertion of the leaves, cells smooth or dorsally protruding at their corners; seta very short; capsule prolate-spher-oidal or elongate-ovoid; peristome double small; lid discoid; beak short and straight; calyptra small, capshaped, margin lobulate; tropical and subtropical bark-mosses.

(133′) **Garovaglia.**** p. 69.

— Primary stem elongate, thin, creeping 417
417. Branch-leaves differing from the stem-leaves in shape and size the branch-leaves always smaller 418

— Branch-leaves and stem-leaves similar 419

418. Main stem filiform, stoloniform at both ends, irregularly pinnately branched; branches short, catkin-like; stem-leaves cordate-ovate, long-acuminate, squarrosely recurved from their middle, margin finely serrate; branch-leaves when dry strictly imbricate, broadly ovate, acute or blunt; cells of stem-leaves linear along the median zone, the remainder mostly roundish-tetragonal or -hexagonal, smooth or the cell-corners papillarly protruding; seta 12—15 mm. long, purple. twisted; capsule inclined to horizontal, ovoid or ellipsoidal; peristome double; lid arched-conical, blunt or beaked; ground- and rock-mosses of temperate regions.

(310′) **Heterocladium.** p. 87.

— Main stem mostly prostrate, at intervals emitting clusters of rhizoids, ± regularly pinnately branched; branches short, mostly horizontally spreading; stem-leaves ovate or cordate-ovate, rapidly attenuated into a lameolate or subulate upper part, crowded, spreading or unilateral or unilaterally falcate; branch-leaves narrower, elliptic-lanceolate, gradually acuminate, leaf-cells linear, with a papilla at their upper end, at the leaf-corners parenchymatic, square or rectangular; seta 10—25 mm. long, red; capsule monosymetrically ellipsoid or elongate-ovoid, inclined to horizontal; lid conical, blunt or pointed; on rocks and tree trunks in temperate subtropical and tropical regions.

(467′) **Ctenidium.**** p. 114.

419. Leaves of the same axis dimorphic 420

— Leaves all subsimilar 426

420. Leaves with a marginal seam of 2—5 rows of elongated, yellowish cells, leaves in 6 rows, the lateral larger, asymmetric, spreading, elliptic, shortly pointed, dorsal and ventral leaves adpressed, obovate, elliptical or suborbicular; leaf-cells subisodiametric, elliptic or hexagonal, smooth, basal cells somewhat larger seta elongate, flexuose, papillose or spinulose; capsule horizontal to pendent, ellipsoidal; peristome double; lid cupola shaped, beak conical, straight; calyptra cap-shaped, smooth or spinulose, margin fringed and lobed; main stem covered with a felt of rhizoids; secondary stems ascending or erect, densely foliose, simple or dicho-

tomously branched; on rotting tree-trunks, wet rocks, humous soil and on the edge of water courses in tropical mountainous regions.

(232′) **Eriopus.**** p. 81.

— Leaves without a marginal seam, or the marginal seam obscure and consisting of a single row of elongated narrow cells 421

421. Lateral leaves erect or erecto-patent 422

— Lateral leaves bifariously spreading, leaf-margins alternately dextrorsely and sinistrorsely incurved or inflexed 424

422. Leaf-cells narrowly prosenchymatic, *either* with one or several rows of papillae over the lumen *or* the upper-cells corners papillarly protruding, *or* nearly smooth; branches mostly ± regularly pinnately disposed; leaves ovate, elliptic or lanceolate, short- or long-pointed, ventrally concave, the dorsal and ventral leaves smaller, right-and left-handedly obliquely adpressed, asymmetric, the lateral leaves slightly asymmetric; seta long, smooth; capsule inclined, monosymmetrically, ovoid; peristome double; lid cuppola-shaped, blunt or acute; calyptra hood-shaped; tree-or rock-mosses of tropical and subtropical regions.

(442′) **Taxithelium.**** p. 105.

— Upper leaf-cells rhombic or rhombic-subhexagonal one and a half to twice as long as broad 423

423. Normal leaves in 8 rows, dorsal and ventral leaves adpressed, alternately inclined towards the right and left, lateral leaves ± spreading, usually transversely wavy, from an elliptical base shortly or elongately lingulate, shortly acuminate or obtuse and apiculate sometimes rounded or subtruncate at the apex; leaf-cells pitted, below the apical part mostly linear, at the leaf-corners small and square; seta short; capsule prolate spheroidal, erect; peristome double; lid conical, beak oblique; calyptra hood-shaped; secondary stems ascending or pendent, pinnately or bipinnately-branched, densely foliose; rock-and tree- mosses of temperate, subtropical and tropical regions.

(184′) **Neckera.**** p. 75.

— Leaves in 5 rows, dorsal and ventral leaves obliquely adpressed, lateral leaves spreading, all subsymmetric, elliptica-oblong, blunt or shortly acuminate; leaf-cells parenchymatic, rhombic or rhombic-subhexagonal, smooth, marginal cells rectangular forming an indistinct seam; seta up to 2 cm. long, smooth; capsule horizontal to pendent, prolate-spheroidal to ellipsoidal; peristome double; lid cupola-shaped, beak canical, mostly straight; calyptra conically cap-shaped, margin very slightly lobulate; the transverse cell-walls of the fundamental tissue of the stem with several pores, the walls resembling sieve-plates; on moist and shady forest ground in temperate and subtropical regions.

(235′) **Hookeria.**** p. 81.

424. Leaf-cells 3—7 times as long as broad, elongate rhombic-or -hexagonal, up to 20—25μ in width, with scanty chloroplasts, transparent; transverse walls of the cells of the fundamental tissue of the stem with 2—3 large pores, the walls resembling sieve-plates; stem irregularly to subpinnately branched; leaves obliquely inserted, ovate, oblong or ovate-lanceolate, shortly or long-and fine-acuminate, dorsal and ventral leaves alternately dextrorsely and sinistrorsely adpressed, lateral leaves bifariously spreading and ± asymmetric; seta 1—1·5 cm. long, smooth, uncinate; capsule horizontal to nodding, elongate-ellipsoidal; peristome double; lid conical, beak long, calyptra elongate-conical, straw-yellow, smooth, margin shortly incised on decaying bark and at the base of tree-trunks in tropical regions.

(267′) **Leucomium.**** p. 83.

— Leaf-cells (8—) 10—30 times as long as broad, elongate-rhombic to narrow-linear; transverse walls of the fundamental tissue cells of the stem not pierced by large pores 425

425. Cells at the leaf-corners more laxly knitted than the other basal cells, hyaline and thin-walled; leaves mostly decurrent; stems frequently with descending stolons, very irregularly branched; leaves ovate, ovate-oblong or lanceolate, short- or long-acuminate, dorsal and ventral leaves alternately dextrorsely and sinistrorsely obliquely adpressed, lateral leaves asymmetric and spreading; leaf-cells smooth, chlorophyllose, the basal cells wider

and shorter; seta long, when dry twisted; capsule inclined or suberect, elongate-ellipsoidal to cylindric; peristome double lid arched-conical, acute or beaked; on rocks, tree-stems, forest ground and the base of tree-trunks in colder, temperate and mountainous subtropical and tropical regions.

(402′) **Plagiothecium.**** p. 100.

— Cells at the leaf-corners not differentiated, cells in general smooth or at their corners papillarly protruding, at the leaf-base shorter; leaves very shortly or not at all decurrent, oblong, elliptic-oblong or lanceolate, shortly or subulately acuminate; stem irregularly or subpinnately branched; dorsal and ventral leaves obliquely adpressed, usually symmetric, lateral leaves bifariously spreading, symmetric or asymmetric; seta 1—3 cm. long; capsule suberect to horizontal, ovoid to subcylindric; peristome double; lid arched-conical, acute, more rarely ending in a beak; mostly on rotting tree-trunks, sometimes found on rocks and stones in temperate, subtropical and tropical regions.

(460′) **Isopterygium.**** p. 112.

426. Leaves bifarious 427
— Leaves radially disposed 431

427. Marginal cells, especially the upper ones, linear, 1—2-seriate, forming a seam; transverse cell-walls of the fundamental tissue of the stem pierced by pores; stem bearing filiform bristles besides rhizoids; leaves cochleariform, broadly elliptic, flexuous, ending in a hair-point; inner leaf-cells parenchymatic, pentagonal or hexagonal; seta 4—5 mm. long; capsule very small, prolate-spheroidal, cup-shaped when empty, beak long, straight; calyptra conical, cap-shaped, margin fringed; found among other mosses in Java.

(225′) **Distichophyllidium.** p. 80.

— Seam not differentiated; transverse walls of the cells of the fundamental tissue of the stem not pierced by pores; stem and branches not bearing bristles . . . 428

428. Leaves cochleariform, ovate or oblong, abruptly ending in a hair-point; leaf-cells narrow-linear, at the leaf-corners rectangular or square and hyaline; plant-mass emerald-

green or yellowish-green ; stem much branched, stoloniferous ; branches suberect or descending ; seta up to 15 mm. in length, dextrorsely and sinistrorsely twisted when dry ; capsule erect, prolate-spheroidal, truncate ; peristome double ; lid arched-conical, apiculate ; rock-moss of temperate regions.

(465′) **Plagiothecium pilifera.** p. 114.

— Leaves rather flat, not deeply concave ventrally, sometimes somewhat induplicate and the margins unilaterally incurved, at the apex truncate, rounded or apiculate, in 4 rows, apparently bifarious ; upper leaf-cells rhombic, elongate-rhombic or rhombic-subhexagonal, more rarely orbicular 429

429. Leaves transversely undulate, oblong-lingulate ; leaf-cells elongate-rhombic, transparent, smooth ; secondary stems rarely erect, commonly prostrate or pendent ; seta rarely as much as 0·5 mm. long ; capsule obovoid ; peristome double ; lid conical, beak oblique ; plant-mass yellowish-green or reddish ; a tropical tree- and rock-moss.

(188′) **Neckeropsis Lepineana.** p. 75.

— Leaves even 430

430. Leaves broadly lingulate or spatulate, base not auricled ; midrib thin, reaching up to the middle of the leaf-blade or shorter, rarely double or absent ; upper leaf-cells roundish-hexagonal or broadly rhombic, at the middle part of the leaf-blade more elongate, lower down linear, along linear, along the line of insertion of the leaves and at the leaf-corners quadratic or rectangular ; seta 1—2 cm. long, red, dextrosely twisted ; capsule erect or slightly inclined, prolate-spheroidal ; peristome double, teeth of exostome yellow or brown below, endostome with a basal membrane, teeth yellow, papillose ; lid conical, beak long and oblique ; calyptra hood-shaped, glabrous ; on the roots and the base of trees, on rocks and stones, more rarely on the ground in temperate regions.

(192′) *Species of* **Homalia.**** p. 77.

Leaves from a short spalutate base nearly orbicular, basal part extended into two semicircular auricles ; midrib entirely wanting ; leaf-cells very small, roundish, along the median zone elliptic, downwards gradually longer ;

endostome wanting ; teeth of exostome pale, not striolate ; temperate and tropical regions.

(193′) **Homaliopsis Targioniana.**** p. 77.

431. Secondary stems prostrate (or pendent), ± regularly pinnately branched ; primary stem creeping, bearing hypophylls and clusters of rhizoids ; branches tamariscoid ; leaves ovate-oblong or-lingulate, shortly acuminate, often auriculate ; leaf-cells linear, smooth, basal cells laxly knitted, brownish-capsule immerged, broadly ovoid or prolate-spheroidal ; peristome double ; lid conical, beak short ; calyptra small, cap-shaped, margin lobulate, or hood-shaped ; tree-mosses of subtropical and tropical regions.

(181′) *Species of* **Calyptothecium.**** p. 75.

— Secondary stems (or primary branches) erect or ascending 432

432. Secondary stems upwards dendroidly or frondosely branched, below mostly bearing hypophylls . . 433

— Secondary stems (or primary branches) irregularly or ± regularly pinnately or bipinnately branched, neither dendroid or resembling fern fronds 435

433. Branches unilaterally decurved ; leaves of secondary stems decurrent, ovate, narrowly acuminate, upwards minutely and remotely serrate ; midribs 2, very short ; branch-leaves ovate-elliptic, strongly serrate ; leaf-cells elongate-hexagonal, prosenchymatic, smooth, at the leaf-corners parenchymatic, ± polygonal, those of the branch-leaves denticulately protruding at their upper corner ; seta very long ; capsule nearly horizontal, ellipsoidal ; peristome double ; C. and E. Himalaya.

(483′) **Leptocladiella.**** p. 115.

— Branches spreading, straight or slightly curved ; secondary stems bearing hypophylls below ; leaves cymbiform or involute ; leaf-cells smooth, a band of basal leaf-cells subisodiametric and usually coloured reddish-brown . 434

434. Cells at the leaf-corners about as large as the remaining cells of the basal band ; branches of secondary stems ± regularly pinnately disposed ; leaves oblonge-or-ovate-lanceolate, acuminate ; suprabasal leaf-cells elliptic linear ; seta very short ; capsule prolate-spheroidal ; peristome-teeth connate in pairs, endostome adhering to the exostome, delicate, hyaline, fugacious, lid discoid or conical, beak

usually short and straight, rarely oblique; calyptra small, cap-shaped, sparsely hairy; tree-mosses of tropical regions.

(142′) **Symphysodon.** p. 70.

— Cells at the leaf-corners smaller than the inner basal cells; branches disposed in a plane, pinnate or bipinnate; leaves oblong or ovate-lanceolate, acuminate; upper leaf-cells elliptic to linear-prosenchymatic; seta short or very short; capsule prolate-spheroidal; teeth of the exostome free from each other, endostome rudimentary; lid conical, beak short; calyptra small, hood-shaped, glabrous; tropical tree-mosses.

(143′) **Symphysodontella.**** p. 70.

435 Leaf-cells scarcely differentiated, most of them turgid, thin-walled, roundish-hexagonal, usually with several papillae over the lumen, marginal and intramarginal cells arranged in numerous rows, mostly transversely oblong or quadratic, the basal median cells more elongate and transparent; primary stem elongate, creeping; secondary stems much branched; branches pinnately disposed, short; leaves ovate, lingulately acuminate; seta short; capsule oblate-spheroidal; peristome double; lid conical, beak short and oblique; calyptra inflated, hood-shaped, bearing scanty, erect hairs, margin irregularly lobulate; bark-and rock- mosses of temperate and tropical regions.

(312′) **Haplohymenium.**** p. 87.

— Leaf-cells distinctly differentiated 436

436. Marginal and intramarginal cells of the lower half of the leaves roundish-square, arranged in numerous rows and differentiated from the inner and upper leaf-cells . 437

— Marginal and intramarginal cells similar to the median cells or only a comparatively small number (20 and less) at the leaf-corners differentiated from the others . . . 438

437 Leaf-cells smooth, the median, apical and basal cells oblong-linear; main stem stoloniform, creeping, ramified; secondary stems numerous, erect or arcuate and ascending; leaves ovate-lanceolate, mostly longitudinally plicate; seta very short or elongate; capsule prolate-spheroidal, sometimes subspherical; peristome double; lid conical, beak straight or oblique; calyptra hood-shaped; longer

than the capsule, enveloping the upper end of the seta; tree-and rock- mosses of temperate regions.

(91′) **Leucodon.**** p. 66.

— Inner and upper leaf-cells both dorsally and ventrally bearing low, roundish papillae over their lumen, apical cells oblong-elliptic, lower cells rectangular, primary stem prostrate or ascending; secondary stems erect, blunt, emitting descending stolons; leaves broadly ovate-lanceolate, bluntly acuminate, margins upwards recurved; seta very short; capsule thick-necked, urn spheroidal, furrowed; peristome absent; lid low cupola-shaped, beak short, conical, oblique; calyptra hood-shaped, or conically cap-shaped, margin lobulate; rock-moss of tropical and temperate regions.

(69′) **Hedwigidium imberbe.**** p. 65.

438. Leaves conspicuously falcately recurved, broadly lanceolate, narrowly acuminate; leaf-cells linear, dorsally with numerous papillae over the inner cell-walls; basal cells transparent, along the line of insertion of the leaves yellow, a few cells at the leaf-corners inflated; tropical tree-mosses.

(459′) **Ectropothecіopsis.**** p. 112.

— Leaves either straight or moderately but not falcately recurved or incurved 439

439. Secondary stems simple or irregularly branched; leaf-cells smooth 440

— Secondary stems ± regularly pinnately to tripinnately branched; leaf-cells dorsally mamillarly protruding or with a papilla over the lumen, or the upper cell-corners papillarly protruding 442

440. A basal band of cells, including the quadratic cells at the leaf-corners, brownish; branches short and straight or longer and curved, resembling fox-tails, leaves broadly ovate- lanceolate, long-and narrow-acuminate; midrib double, very short; leaf-cells linear-prosenchymatic, basal cells broader; seta about 2 cm. long, red, when dry twisted; capsule-erect, spheroidal; peristome double; lid low-conical, blunt; tree-moss of Sikkim.

(410′) **Pylaisiopsis speciesa.**** p. 102.

— Basal cells not tinted 441

441. Branches somewhat laxly foliose, ascending, often sinuous; leaves mostly furrowed, rarely even, usually spreading or squarrose; leaf-cells linear or elongate-rhombic, the basal cells more laxly knitted, at the leaf-corners commonly square; seta short, straight, smooth; capsule erect, prolate-spheroidal to cylindric; peristome small, double; lid conical, beak oblique; calyptra hood-shaped, glabrous; tree-mosses of tropical and subtropical regions.

(131′) **Endotrichella.**** p. 69.

— Branches densely foliose, erect or some of them stoloniform; leaves ovate or ovate-lanceolate, mostly subulately acuminate or ending in a hair-point, margins often serrate, sometimes ciliate, more rarely quite entire; leaf-cells elongate-rhombic or-hexagonal, at the leaf-corners mostly differentiated; seta 1 to about 7 mm. long, twisted when dry, capsule erect, obovoid or pear-shaped, when dry longitudinally wrinkled; peristome single or wanting; lid arched-conical or cupola-shaped, umbilicate or shortly beaked; dwarf tree-mosses of warmer temperate and tropical regions.

(283′) **Fabronia.**** p. 85.

442. Midrib entirely absent; leaf-margins minutely denticulate; leaves ovate-lanceolate, cochleariform, narrowly or subulately acuminate; leaf-cells elongate-hexagonal, very small and numerous, dorsally ± mamillarly protruding, at the leaf-corners numerous quadratic, chlorophyllose; seta up to 7 mm. in length, sinuous, twisted when dry; capsule erect, prolate-spheroidal; peristome double; lid conical, beak oblique; tree-moss of Nepal.

(293′) **Schwetschkeopsis Fabronia.**** p. 85.

Midribs two, short and thin 443

443. Secondary stems pinnately to tripinnately branched; branches straight, spreading approximately at an angle of 45°; leaves ovate or ovate anceolate, acute or acuminate, cochleariform, upwards serrulate, not transversely wavy; leaf-cells linear-prosenchymatic, ± papillose, at the leaf-corners comparatively few much wider, roundish-square; seta thin, 1 - 3 cm. long, straight or sinuous; capsule erect, prolate-spheriodal, densely beset with

spinules or papillae; peristome double; lid conical, beaked; calyptra hood-shaped, smooth; tropical and subtropical tree-mosses.

(266′) **Symphyodon.**** p. 83.

— Branches short and blunt or longer and pinnate, often variously curved, spreading at various angles; leaves ± one sided, ventrally concave, broadly ovate or elliptical, upwards transversely wavy subabruptly or gradually attenuated into a subulate point; leaf-cells linear or narrowly subhexagonal, at their upper corner papillarly protruding, basal cells shorter, at the leaf-corners square or irregularly polygonal; seta 2—5 cm. long, sinuous; capsule horizontal to pendent, monosymmetrically ellipsoidal to-subcylindric peristome double; lid cupola-shaped or arched-conical, apiculate; temperate regions of the Himalaya.

(481′) **Gollania.**** p. 115.

444. Leaves panduriform (resembling the body of a violin); stem prostrate to ascending, branches pinnately divided; leaf-cells linear, densely and finely papillose over the lumen, basal cells yellowish-brown; alar-cells brownish-red, numerous, quadratic, or subhexagonal; seta 1—2 cm. long, straight; capsule erect, subspherical; peristome absent; lid flat-conical, beak oblique; calyptra hood-shaped; growing in wet places, reported from Borneo.

(73′) **Rhacocarpus.** No page.

— Leaves ovate oblong, ovate-lanceolate or lanceolate-subulate 445

445. Primary branches differentiated into sterile, gemmiferous and often also fertile branches, the gemmiferous and fertile branches larger, caudate, their leaves decreasing insize upwards, the sterile branches shorter, ± blunt; main stem scantily beset with hypophylls or bare; leaves ovate-lanceolate; leaf-cells linear, alar cells varying in different species; seta elongate; capsule erect, small, ovoid; peristome double; lid cupola-shaped, beak straight or oblique, short, calyptra hood-shaped; on the bark of trees and on rotting tree-trunks in mountainous tropical and subtropical regions.

(405′) (**Clastobryopsis** of Fleischer) **Aptychella.**** p. 101.

— Primary branches not differentiated into sterile and gemmiferous branches 446

446. Apical leaves of the branches rolled up into a pungent point; stem prostrate or emitting only scanty rhizoids; primary branches ascending or erect; leaf-cells narrowly prosenchymatic, pitted, rarely quite smooth or with a very small papilla over the lumen; alar cells hyaline or yellow, rarely dark-brown; seta elongate, warty or papillose, capsule inclined or suberect, ovoid to cylindric; peristome double; lid conical, beak acicular; calyptra hood-shaped, fugacious; on the trunks and branches of trees, less frequently on rocks or forest ground in tropical and subtropical regions.

(435') **Acroporium.**** p. 105.

— Branches and branchlets blunt, acute, sometimes caudate, never pungent 447

447. Alar cells nearly of the same size as the neighbouring inner and upper cells, usually no more than one and a half times the width of the latter, commonly thin-walled and hyaline, not inflated 448

— Alar cells inflated, one and a half to two and a half times as wide as the neighbouring inner and upper cells thick-walled, either forming a well-defined roundish or quadratic groups, or the basal one or two horizontal rows consisting of oblong cells accompanied by smaller, usually hyaline upper alar cells or continued laterally into a band of coloured cells of decreasing size and extending towards or close up to the midrib 466

448. Alar area narrow-or broad-triangular, often ± lanceolate in outline 449

— Alar area square or roundish in outline *or* gradually passing into the inner and upper cells *or* continued inwards as a basal narrow band extending to the midrib 455

449. The number of alar cells comparatively small, scarcely ever more than thirty, often less 450

— The number of alar cells exceeding thirty, commonly considerably more 452

450. Branches unilaterally disposed, rooting at their base; main stem sometimes produced into a flagellum, mostly stoloniform, at intervals beset with clusters of rhizoids; leaves shortly or subulately acuminate; leaf-cells elongate-hexagonal, wider or narrower, smooth or thickened at their corners, sometimes dorsally papillose, basal cells

somewhat wider and longer, alar cells quadratic, in several rows; seta 8—15 mm. long, twisted when dry; capsule erect, prolate-spheroidal or subcylindric, peristome double lid conical, beak short; calyptra hood-shaped, long; on tree-trunks, exposed of roots of trees and on rock-debris in temperate regions.

(382′) **Pterigynandrum.**** p. 98.

— Branches irregularly or pinnately disposed . . . 451

451. Plants whitish-green, with a silvery-sheen; main stem ± densely beset with clusters of reddish rhizoids; branches upright; leaves ovate, gradually subulately or subcapillarly attenuated; leaf-cells linear, alar cells square, distinctly broader than the adjacent inner and upper cells, hyaline; seta about 15 mm. long, straight, twisted when dry; capsule erect, prolate-spheroidal; endostome wanting; lid short, conical, blunt; in the N. W. Himalaya and in Yünnan.

(408′) **Struckia argentata.**** p. 102.

— Plants bright-, yellowish- or brownish-green, main stem remotely beset with clusters of rhizoids; branches short, upright or arcuate; leaves ovate- or elliptic-lanceolate, subulately acuminate; leaf-cells narrow-prosenchymatic, smooth or the leaf-corners papillarly protruding, alar cells small, square, chlorophyllose; seta 1—2 cm. long, when dry dextrorsely and sinistrorsely twisted; capsule inclined to horizontal, elongate-ellipsoidal, curved; peristome double; lid cupola-shaped, beak short and acute; on tree-trunks, rocks, ruined walls and rock-debris in temperate hilly and mountainous regions.

(450′) **Homomallium.**** p. 109.

452. Alar cells, particularly the marginal and submarginal ones, hardly, if at all, wider than the inner cells, very numerous 443

— Alar cells distinctly wider than the adjacent inner cells . 454

453. Leaves broadly ovate or elliptic, subabruptly shortly and narrowly acuminate; branches elongate, catkin-like, leaf-cells prosenchymatic; alar cells polygonal, marginal and sub-marginal alar cells nearly square or transversely oblong; seta (0·5—) 1—2·5 cm. long, twisted when dry; capsule erect, prolate-spheroidal; peristome double;

lid conical, beak rather long; calyptra hood-shaped; tree-and rock-mosses of tropical and subtropical regions.

(381′) **Erythrodontium.**** p. 98.

— Leaves ovate- or elliptic-lanceolate, often unilateral, long-acuminate; branches short, ascending or suberect, often curved; leaf-cells narrowly rhombic-sublinear, alar cells small, square; seta 1—2 cm. long, twisted when dry; capsule erect, prolate-spheroidal; peristome double; lid conical, ± beaked; calyptra hood-shaped; mostly on tree-trunks, rarely on siliceous rocks in te mperate regions.

(448′) **Pylaisia.**** p. 109.

454. Inner leaf-cells narrow-linear; leaves longitudinally plicate, narrowly ovate lanceolate; plants green or yellowish-green; seta 15—20 mm. long, sinuous; capsule erect, cylindric; peristome double; lid conical, beak oblique; tree-mosses of tropical and subtropical regions.

(385′) **Campylodontium.**** p. 98.

— Upper leaf-cells rhombic, lower more elongate; leaves even, ovate- or elliptic-lanceolate, sharply or acuminately pointed; seta 8—15, rarely 20 mm. long; capsule prolate-spheroidal, sometimes slightly curved; peristome double; lid conical, beak short and oblique; on various substrata in temperate regions.

(447′) **Platygyrium.**** p. 109.

455. Leaves one-sided, falcate, uncinate or squarrosely spreading either from their very base or from higher up, lateral leaves often differentiated from the dorsal and ventral leaves, at least in the degree of divergence . . . 456

— Leaves ± symmetric and straight, lateral leaves either differentiated from, or similar to, the dorsal and ventral leaves 460

456. Leaves upwards either serrate or biserrate, coarser alternating with finer teeth; main stem creeping, prostrate or flexuous; leave closely set, distinctly one-sidedly acuminate, cochleariform, upwards transversely wavy; leaf-cells narrow-linear, their upper corner papillarly, sometimes denticulately protruding, basal cells shorter, alar cells quadratic or subhexagonal; seta 2—5 cm. long,

sinuous; capsule horizontal, ellipsoidal to subcylindric, monosymmetric, ± curved; peristome double; lid arched-conical, acute or apiculate; calyptra hood-shaped; in forests in tropical and warmer temperate regions.

(481′) **Gollania.**** p. 115.

— Leaves quite entire or denticulate only at the very base or apex 457

457. Leaves radiately disposed, either not falcate at all or only the upper leaves of the shoots ± unilaterally falcate, either recurved from the very base or from the middle, rarely gradually attenuated from base to apex and stellately spreading at the upper end of the shoots, in most species broadly ovate and abruptly drawn out into a long and narrow, channelled point; leaf-cells narrow-linear, alar cells quadratic, golden-yellow; capsule inclined to horizontal, subcylindric, curved; persitome double; lid arched-conical, acute or apiculate; on calcareous ground and rocks, the walls of wells, the base of trees or swampy ground in temperate regions.

(335′) **Campylium.**** p. 91.

— Leaves either ± unilaterally falcate or the dorsal and ventral leaves ± adpressed, the lateral spreading, or both characters present 458

458. Tropical and subtropical tree-mosses (rarely found on rocks and forest ground), forming dense plant-masses, the plants frequently interwoven; branches pectinately, regularly or ± irregularly pinnately disposed; leaf-cells narrowly prosenchymatic, sometimes ± mamillarly protruding basal cells shorter, alar cells small, rectangular or square; seta elongate; capsule horizontal to pendent, ovoid, urn-shaped or cylindric; peristome double; lid cupola-shaped apiculate or shortly beaked; on tree-trunks, more rarely on rocks and forest ground in tropical and subtropical regions.

(455′) **Ectropothecium.**** p. 110.

— Temperate, subarctic and arctic mosses, growing on the bark and exposed roots of trees, on rotting tree-trunks, on rocks and rock-debris and on forest ground . . 459

459. Branches mostly irregularly pinnately disposed; upper part of shoots commonly falcately or uncinately recurved:

main stem with or without rhizoids; leaf-cells narrow-prosenchymatic, mostly smooth, alar cells parenchymatic; seta elongate; capsule inclined to horizontal, ellipsoidal to cylindric, ± curved; peristome double; lid arched-conical, umbilicate or apiculate, sometimes ending in a short beak.

(452′) Hypnum.** p. 109.

— Branches pectinately disposed, horizontally spreading; main stem 6—10 cm. long, rigid, without rhizoids, divided into three ascending branches; plant-mass golden- or brownish-green; leaves cordate-ovate, gradually attenuated into a subulate point, auriculate at the base; leaf-cells linear, sinuous, broader at the leaf-base, orange along the line of insertion of the leaves, alar cells square, parenchymatic; on wet rocks in alpine and arctic regions.

(455′) **Pseudostereodon.** p. 110.

460. Stems densely interwoven, plant-mass pale-yellow or yellowish-green; branches about 2 cm. long; branchlets slender, straight or curved, when dry catkin-like, stem-leaves broadly ovate, short acuminate, branch-leaves more broadly acuminate; leaf-cells narrowly linear, alar cells subquadratic, chlorophyllose; seta about 2 cm. long; capsule erect, cylindric; peristome double; lid conical, beak short; calyptra cap-shaped: tree-mosses of tropical regions.

(446′) **Bryosedgwickia.**** p. 109.

— Stems not interwoven 461

461. Stem- and branch-leaves differentiated; stem-leaves broadly elliptical or cordate-ovate, rapidly attenuated into a lanceolate or subulate point; branch-leaves narrower, elliptic-lanceolate, gradually acuminate; leaf-cells linear, with a more or less evident papilla over the lumen, alar cells square or oblong; seta 10—25 mm. long, red; capsule inclined to nodding, monosymmetric, obovoid or ellipsoidal, ± curved; peristome double; lid conical, acute or blunt; plant-mass yellowish-or bright-green or golden-brown; tree- and rock-mosses of temperate, subtropical and tropical regions.

(467′) **Ctenidium.**** p. 114.

— Stem- and branch-leaves not essentially differing from each other 462

462. Stem and the axis of the branches filiform, laxly foliose; branches irregularly disposed, erect or flexuously spreading; leaves lanceolate or lanceolate-subulate, slightly concave; leaf-cells elongate-rhombic or -hexagonal, mostly only 2—6 times as long as broad, basal cells parenchymatic, alar cells quadratic; seta 5—12 mm. long; capsule erect, rarely inclined and curved, obovoid to cylindrical; peristome double; lid arched-conical, blunt or pointed; tree-and rock-mosses of temperate and colder regions.

(314′) **Amblystegiella.**** p. 92.

— Stem and axis of branches stouter, densely foliose . . 463

463. Branches and branches in outline clavate, often curved; branches creeping; leaves elliptic-oblong, cochleariform, rapidly attenuated into a subulate point; leaf-cells narrow linear, sinuous, smooth, wider and brownish-yellow along the line of insertion of the leaf, alar cells square, in several tiers, sometimes hyaline, usually tinted; seta 15—20 mm. long, sinuous when dry, dextrorsely and sinistrorsely twisted; capsule erect, cylindric; peristome double; lid conical, blunt; on tree-trunks in Sikkim and Khasia.

(410′) **Gammiella pterogonoides.**** p. 102.

— Branches and branchlets terete, blunt or attenuated upwards 464

464. Apical and most of the other leaf-cells narrowly rhombic-sublinear or narrow-linear, only the basal cells, as a rule, shorter, the alar cells isodiamatric square or hexagonal, forming a well defined groups; main stem prostrate, flexuose or ascending with or without clusters of rhihzoids; branches regularly or irregularly pinnately disposed, spreading; leaves *either* uniform, *or* the dorsal and ventral leaves laxly imbricate, the lateral leaves spreading, ovate- or elliptic-oblong or ovate-lanceolate, obtuse or apiculate, rarely ending in a hair-point; seta 1—3 cm. long, rarely shorter; capsule erect and straight or slightly curved; peristome double; lid conical, acute or ending in a short and oblique beak; tree- and rock-mosses, also found on rock-debris in temperate, subtropical and tropical regions.

(388′) **Entodon.**** p. 99.

— Apical cells rhombic or narrowly and irregularly elliptic . 465

465. Apical cells rhombic, lower cells elongate-rhombic or hexagonal to linear, marginal cells ± differentiated, alar cells square; main stem creeping; branches irregularly or pinnately disposed, terate or more or less complanate; leaves ± heteromorphic, the ventral leaves smaller and more acuminate; seta short; capsule erect or inclined, ovoid or elongate-ellipsoidal; endostome wanting or obscure; lid arched conical, beak short or long; mostly tree-, rarely rock-mosses of tropical and subtropical regions.

(417′) *Some species of* **Meiothecium.** p. 103.

— Upper leaf-cells irregularly elliptic, dorsally papillarly protruding, basal cells near the midrib transversely oblong, rhombic-sub-hexagonal or elliptic, forming numerous oblique rows, alar cells numerous, quadratic or transversely oblong, chlorophyllose; main stem extensively creeping, firmly attached to the substratum by numerous rhizoids, densely foliose; branches mostly regularly pinnately disposed, branchlets catkin-like, ascending or erect; branch-leaves homomorphic, closely imbricate when dry, when moist squarrosely spreading, broadly ovate, shortly and narrowly acuminate; seta about 15 mm. long, sinuous; capsule horizontal, ellipsoidal; peristome double; lid cupola-shaped, beak very short; on tree-trunks and rocks in tropical and subtropical regions.

(383′) **Trachyphyllum.**** p. 98.

466. Alar cells isodiametric or nearly so, polygonal, square or shortly oblong, forming a well defined, ± orbicular group 467

— The basal or suprabasal cells oblong, frequently somewhat curved, the outer cells sometimes divided by two or three transverse walls, the marginal alar cells often continued inwards by similar cells decreasing in size towards the middle of the leaf-blade 476

467. Leaves either apparently bifarious or differentiated into dorsal, ventral and lateral leaves, commonly ± falcate; branches and branchlets commonly incurved or uncinate 468

— Leaves of the same axis radiately disposed, not differentiated nor falcate; branches and branchlets straight . 469

468. Hydrophilous ; leaves ovate-lanceolate, dorsal leaves short, lateral and ventral leaves longer and narrowly acuminate ; leaf-cells narrow-prosenchymatic ; seta elongate ; capsule inclined to horizontal, elongate-ovoid to subcylindric ; peristome double ; lid arched-conical, acute ; an inhabitant of temperate regions.

(455′) **Breidleria arcuata.** p. 110.

— Meso-and xerophilous ; leaves mostly ovate—or cordate-ovate-lanceolate, short—to subulate-acuminate, mostly unilaterally falcate, the dorsal, lateral and ventral leaves mostly differentiated ; leaf-cells narrowly prosenchymatic, alar cells hyaline or yellowish-brown ; seta elongate ; capsule inclined to horizontal, elongate-ellipsoidal to cylindric ; peristome double ; lid arched-conical, ending in a wart or short point, more rarely shortly beaked ; on various substrata in temperate and subtropical regions.

(452′) *Species of* **Hypnum.**** p. 109.

469. Branches and branchlets stout- or slender-club-shaped, blunt, close-set ; leaves ventrally concave, ovate or oblong-lanceolate, margin reflexed ; leaf-cells elongate-rhombic or hexagonal-sublinear, alar cells square and oblong, tinted, often golden-yellow ; seta elongate ; capsule erect, ovoid-subcylindric ; peristome double ; lid conical, beak long ; tropical tree-mosses.

(444′) **Macrohymenium.**** p. 108.

— Branches and branchlets terete or upwards attenuated . 470

470. Main stem without rhizoids, prostrate or ascending, vermiform ; branches bifariously arranged, densely foliose ; leaves laxly imbricate, ovate or ovate-oblong, rounded at the apex and recurved-apiculate, cochleariform, plicate, leaf-cells narrow-linear, sinuous, basal cells rectangular, alar cells quadratic, pale-coloured, alar area concave ; seta 25—45 mm. long ; capsule inclined to horizontal, ellipsoidal ; peristome double ; lid conical, acute ; on forest ground in temperate regions.

(394′) **Pseudoscleropodium.** p. 100

— Main stem creeping 471

471. Alar cells shortly oblong or broadly elliptic, often more or less mixed with, or accompanied upwards by, suborbicular, squarish or polygonal alar cells; main stem simple or ± ramified; branches irregularly to pinnately disposed; leaves always ± spreading, elliptic, oblong or oblong-elliptic, blunt at the apex or broadly acuminate or acute or ending in a hair-point; leaf-cells narrowly prosenchymatic, smooth; seta ± elongate; capsule sub-erect to horizontal, ovoid or ellipsoidal; peristome double; lid arched-conical, beak needle-shaped; tree-, more rarely rock-mosses of temperate, subtropical and tropical regions.

(431′) *Species of* **Sematophyllum.**** p. 104.

— Alar cells polygonal or square 472

472. Alar cells thin-walled, hyaline; main stem arcuate; secondary stems ascending, upwards closely branched; branches pinnate to tripinnate, often flagellate; branch-leaves squarrosely spreading, ovate or cordate-ovate, acute or acuminate; midrib double, of various lengths; leaf-cells linear, often with a papilla on the cell-corner; seta 2—5 cm. long; capsule erect, prolate-spheroidal to cylindric; peristome double; lid conical, blunt; mostly on trees in the Himalaya.

(484′) **Leptohymenium.**** p. 116.

— Alar cells thick-walled 473

473. Secondary stems dendroidly or dumosely branched; branches pinnately ramified; lower leaves minute, squarrose, upper much larger, cochleariform, ovate- or obovate-oblong, obtuse, acute or short-acuminate; leaf-cells prosenchymatic, with sinuous lumen, at their corners mostly papillarly protruding, alar cells chlorophyllose; seta short, red; capsule inclined to horizontal, ovoid-short-cylindric, asymmetric; peristome double; lid conical, acute or shortly beaked; tree-moss of tropical regions.

(203′) **Camptochaete.**** p. 79.

— Secondary stems (or primary branches) simple or irregularly or furcately branched, close-set; alar cells yellowish or brown 474

474. Stem-and branch-leaves differentiated; stem-leaves hypophylloid, spreading, broadly lanceolate, rapidly attenuated into a mostly recurved point; branch-leaves large, adpressed, elliptic- or narrow-lanceolate, acuminate; leaf-cells elongate-rhombic, transparent, upwards shorter, at their corners with a small papilla, alar cells in 2 or 3 tiers, quadrate or roundish; capsule erect, prolate-spheroidal or -ovoid; lid beaked; calyptra large, hood-shaped; bark- and leaf-mosses of tropical regions.

(407′) *Section* **Clastobryellina** *of* **Clastobryella.**** p. 101.

— Stem-and branch-leaves not essentially differing from each other 475

475. Main stem sparsely beset with rhizoids; leaves scarcely or not at all plicate, ovate-oblong or ovate-lanceolate, gradually or abruptly subulately or lorately acuminate, margins upwards incurved; inner and upper leaf-cells thin-walled, narrow-linear, smooth; seta elongate, smooth; capsule erect, prolate-spheroidal; peristome double; lid conical, beak oblique, fine; calyptra hood-shaped; tropical and subtropical tree-mosses.

(123′) **Myurium.**** p. 68.

— Main stem covered with a dense felt of brown rhizoids; leaves deeply plicate, evenly lanceolate, margins flat; inner and upper leaf-cells thick-walled and pitted; seta upwards mamillose; capsule suberect or inclined, prolate-spheroidal; peristome double; lid cupola-shaped, beak short; tropical tree-moss.

(124′) **Piloecium pseudorufescens.**** p. 68.

476. Leaves of the same axis generally ± differing from each other: stem-leaves some larger, some smaller, their broadly ovate or elliptic-oblong basal part contracted into a flexuose, subulate upper part; branch-leaves dimorphic, the lateral larger and spreading, ovate-lanceolate, narrowly acuminate, the dorsal and ventral leaves smaller, narrow-elliptic and narrowly acuminate; leaf-cells dorsally with a papilla over the lumen, alar cells hyaline, two or three of them curved, linear-oblong, the marginal cell several times as long as broad; seta 25—35 mm. long, ± flexuose; capsule inclined to horizontal, ovoid, curved; lid cupola-shaped, beak very

short and straight; on forest ground and on the trunks and exposed roots of trees in tropical regions.

(439′) **Acanthorrhynchium.**** p. 107.

— Leaves of the same axis not essentially differing from each other 477

477. Leaves distinctly one-sided to unilaterally falcate . . 478

— Leaves not falcate, mostly nearly symmetrical, sometimes slightly or obscurely one-sided 483

478. Leaf-cells with several papillae over the lumen; leaves lanceolate or elongate-elliptic and drawn out into a lanceolate, subulate point, upwards serrulate, in some species falcate, in others only one-sided; lumen of cells narrow-elliptic, cell-wall thick, alar cells 2 or 3, large, elliptic, cells along the line of insertion of the leaves yellow; seta comparatively short (10—15 mm.); capsule small, nodding or pendent, ellipsoid or cylindric; peristome double; lid cupola-shaped, beak needle-shaped; on the bark of trees and decaying wood, rarely on rocks, in tropical and subtropical regions.

(437′) *Section* **Thelidium** *of* **Trichosteleum.** p. 105.

— Leaf-cells either smooth or papillose, the papillae being either solitary or minute and irregularly distributed over the cell-lumen, or the upper cell-corners papillarly protruding 479

479. Margins of leaves sharply serrate from the tip to about the middle of the leaf-blade; leaves unilaterally falcate, elliptic or elliptic-oblong, gradually attenuated into a lanceolate-subulate apical part; main stem beset with clusters of brown rhizoids; branches simple or pinnate; leaf-cells strictly linear, the alar cells gradually becoming shorter commencing from the marginal long and broad cell and continuing inwards as basal cells, all of them golden-yellow or brownish, the suprabasal alar cells polygonal and hyaline; seta 5—6 cm. long, sinuous; capsule short-cylindric, somewhat asymmetric; peristome double; lid cupola-shaped, umbilicate; on tree-trunks in the Indian Archipelago.

(412′) **Mastopoma.** p. 102.

— Margin of leaves quite entire or the serrations confined to the subulate point 480

480. Leaves only slightly unilaterally falcate, lanceolate, gradually attenuated into the subulate point, upwards serrulate or quite entire; branches short, erect or ascending; leaf-cells narrow-linear, alar cells 3—4, large, oblong, yellowish; seta 1 cm. long or less, twisted when dry; capsule erect or slightly inclined, cylindric; peristome double; beak of lid long and oblique; a tree-moss of Sikkim.

(423′) **Pylaisiadelpha drepanoides.**** p. 103.

— Leaves conspicuously falcate 481

481. Branches irregularly disposed, irregularly pectinate or irregularly pinnate, horizontally spreading or ascending; leaves passing quite gradually from an ovate-lanceolate basal part into a long, subulate, conspicuously unilaterally falcate apex; margin quite entire; upper leaf-cells transparent seta elongate, red; capsule ± inclined, ovoid or obconic; peristome double; lid cupola-shaped, beak thin, moderately long; found mostly on tree-trunks, less frequently on rocks and humous ground in tropical and subtropical regions.

(426′) *Section* **Cupressinopsis** *of* **Rhaphidorrhynchium.**** p. 104.

— Branches regularly pinnately disposed; apical part of leaves serrulate 482

482. Branch-leaves gradually attenuated into a narrowly subulate point, oblong- or ovate-lanceolate; leaf margin recurved; leaf-cells elongate-rhombic to linear, alar cells oblong, one or the other often irregularly divided by transverse walls into two or three equal or unequal compartments, mostly golden-yellow, gradually passing inwards into usually two rows of shorter coloured cells extending along the base of the leaf-blade and accompanied by an upper horizontal row of hyaline cells; seta long and sinuous; capsule erect or inclined, ovoid-cylindric; peristome double; lid conical, beak short or moderately long; calyptra mostly hood-shaped; tree-mosses of temperate, subtropical and tropical regions.

(424′) **Brotherella.**** p. 103.

— Branch-leaves elliptic-oblong or lanceolate, abruptly passing into a rather long, nearly filiform and often flexuous or twisted subulate point; leaf-cells narrowly elliptic

to linear, alar cells about 3, elongate-oblong, yellow or hyaline, accompanied by a row of shorter, irregularly polygonal upper alar cells and continued inwards along the leaf-base by yellow, linear cells shorter than the upper cells; seta long and thin; capsule horizontal or nodding, elongate-ellipsoidal or narrow-obconic; lid cupola-shaped or conical, beak needle-shaped; calyptra bell-shaped, beaked, margin lobed or nearly entire; peristome double; on tree-trunks in mountainous tropical regions.

(428′) **Warburgiella.**** p. 104.

483. Marginal and intramarginal cells, at least upwards, clearly differentiated from the inner leaf-cells, forming a distinct seam; primary stem ± densely beset with rhizoids 484

— Marginal cells not essentially different from the inner cells *or* linear and arranged in a single row, but not forming a well defined seam 485

484. Main branches simple or sparsely ramified; leaves elliptic or elliptic oblong, shortly to subulately acuminate; leaf-cells rhombic, downwards more elongate, with a papilla over the lumen; leaf-margin quite entire or near the upper end minutely serrulate; alar cells yellowish or hyaline, about three in number, oblong; seta elongate or less than 1 cm. long; capsule small, suberect to pendent, ovoid, ellipsoidal or subcylindric; peristome double; lid cupola-shaped, beak moderately long to needle-shaped; tree-, rarely rock-mosses of tropical and subtropical regions.

(438′) *Section* **Papillidium** *of* **Trichosteleum.**** p. 105.

— Secondary stems erect, simple below, upwards branched, branches pinnately disposed or in clusters, short, like the secondary stems densely foliose; leaves elliptic or ovate, rapidly attenuated into a lingulate, lanceolate or lanceolate-subulate acumen; margins upwards serrate, the seam extending from the leaf-tip downwards, leaf-cells prosenchymatic, thick-walled, smooth, the upper cells with an elliptic lumen, near the leaf-tip polygonal, alar cells in one or several tiers, golden-yellow or brown; seta very long, sinuous; capsule large, horizontal, ellipsoidal; peristome double; lid conical, beak long; on

the trunks and exposed roots of trees and on decaying bark in tropical regions.

(414′) **Trismegistia.**** p. 103.

485. Main stem very shortly creeping or more commonly ascending, rhizoids scanty; branches clustered; leaves elliptic, acute or blunt; leaf-cells linear, at their upper end often papillarly protruding, alar cells elongate-hexagonal or nearly oblong, brownish-yellow; seta about 1 cm. long, very thin, twisted, red; capsule very small, inclined, ovoid; peristome double; lid conical, beak short; reported from Sikkim.

(407′) **Hageniella.**** p. 101.

— Main stem elongate, creeping 486

486. Leaves narrow-lanceolate, rigidly erect or spreading, somewhat twisted, moderately concave at their broader part, upwards flat, margins nearly entire; leaf-cells elongate-rhombic, opaque, with scattered papillae, alar cells reddish-brown or yellowish; branches, as a rule, close-set; seta coarsely papillose; capsule erect, short-cylindrical; peristome double; lid cupola-shaped, shortly and somewhat beaked; tree-moss of the Indian Archipelago.

(407′) **Clastobryophilum.** p. 101.

— Lower part of the leaves broader, ovate, elliptic or oblong . 487

487. Brood bodies (gemmae) regularly present, papillose; leaves cochleariform and cymbiform 488

— Brood-bodies only occasionally or not at all developed, never constituting a regular feature . 489

488. Margin of leaves quite entire or nearly so; plant-mass golden-or brownish-green or copper-red, sometimes yellowish-green, often variegated; branches erect sometimes pendent, sometimes caudate; alar cells purplish-red; seta elongate, twisted, purple; capsule erect or slightly inclined; teeth of the exostome recurved when dry, endostome stellately inflexed; lid cupola-shaped, beak short and oblique; on the bark of trees and on humous ground, Indian Archipelago.

(406′) **Clastobryum.** p. 101.

— Margin of leaves upwards denticulate; plant-moss green or pale or yellowish-green; branches close-set, short,

mostly erect, purplish, densely foliose, acute; alar cells curved, narrow-elliptic, pale- or reddish-brown; capsule erect or slightly inclined, elongate-ovoid; lid cupola-shaped, beak short and oblique; on the bark and branches of trees, sometimes on leaves, Indian Archipelago.

(407′) *Section* **Euclastobryella** *of* **Clastobryella.** 101.

489. Branches irregularly, or irregularly pinnately disposed . 490
— Branches regularly, and often conspicuously regularly pinnately disposed, in some species radiately arranged, branching open or the branches densely crowded . . 499
490. Leaves always ± spreading, not adpressed even when dry, sometimes the upper one-sided, elliptic, elliptic-oblong or oblong, either blunt or shortly or long-lanceolate to lanceolate-subulate, sometimes ending in a hair-point; leaf-cells mostly narrow-prosenchymatic, smooth seta elongate, smooth; capsule suberect to horizontal, prolate-spheroidal to elongate-ellipsoidal; peristome double; lid cupola-shaped, beak short to needle-shaped; tree-, less frequently rock-mosses of temperate, subtropical and tropical regions.

(431′) **Sematophyllum.**** p. 104.

— Leaves when dry closely or laxly adpressed . . . 491
491. Stem-leaves broadly elliptic, upwards gradually lanceolate-subulate; stem commonly attenuated into a stiff terminal part, often ending in a flagellum; branches sometimes shortly flagelliform; leaf-cells prosenchymatic, the lower thin-walled, basal cells golden-yellow, alar cells golden-yellow or brownish, rarely hyaline; seta long, sinuous, smooth; capsule horizontal, slender-obconic; peristome double; lid conical, beak short or long; tree-mosses mostly of tropical and subtropical regions.

(413′) *Section* **Euacanthocladium** *of* **Acanthocladium.**** p. 102.

— Stem-leaves ovate-oblong, broadly elliptic- or ovate-lanceolate, acute, apiculate or shortly acuminate, never subulate 492
492. Leaves ovate, elliptic or oblong, acute to lanceolately acuminate, often broadly recurved at their margins, mostly ± distinctly heteromorphic, the ventral leaves smaller and more acuminate; upper leaf-cells mostly

rhombic with elliptic lumen, the lower more elongate, basal cells yellow, alar cells not extending far towards the middle of the leaf-blade; seta often short, smooth or upwards mamillose; capsule erect or inclined, ovoid or ellipsoid, rarely subcylindric; endostome absent or obscure; lid cupola-shaped; beak short or moderately long; calyptra small, hood-shaped; mostly tree-, rarely rock-mosses of tropical and subtropical regions.

(417) **Meiothecium.**** p. 103

Leaves elliptic-lanceolate, very gradually acuminate, apex acute, margin bent upwards or recurved; upper leaf-cells elongate-rhombic, the lower cells longer and narrower, basal cells golden-yellow, alar cells gradually passing into the shorter basal cells, hyaline or brownish yellow; seta up to 3 cm. long, sinuous, smooth; capsule suberect to inclined, cylindric; endostome adhering to the exostome; lid conical, beak long and fine; calyptra hood-shaped, small; a subtropical and tropical tree-moss.

(423′) **Chionostomum rostratum.**** p. 103.

493. Leaf-cells densely papillose, papillae in several rows over the lumen as well over the outer edges of the inner cell-walls, the cells 8—12 times as long as broad, elongate-rhombic, alar cells 30—40 μ long; leaves dimorphic: stem-leaves larger, elliptic-lanceolate, shortly acuminate, branch-leaves spreading, elliptic, very shortly acuminate; seta 15—20 mm. long, straight, uncinate at its upper end; capsule inclined to pendent, ovoid; peristome double; lid cupola-shaped, blunt or shortly pointed; on decaying bark or wood, or close to the base of tree-trunks in tropical regions.

(441′) *Species of* **Taxithelium.**** p. 105.

— Leaf-cells smooth or with only a single papilla over the lumen 494

494. Leaves *either* abruptly contracted into a lorate, cuculliform or capillary point, *or* attenuated into a short-lanceolate or broadly lorate or short and broad linguiform acumen 495

— Leaves ± gradually attenuated into an acutely pointed acumen 496

495. Leaf-blade oblong or oblong-elliptic, variously attenuated upwards; main stem bearing adpressed, ± deciduous hypophylls; branches ascending or erect, simple or irregularly ramified, somewhat flattened, obtuse, rather closely pinnately disposed; leaf-cells thick-walled, smooth or papillose, lumen narrow-elliptic to linear, alar cells large, oblong-elliptic, inwards decreasing in width, finally linear-oblong, hyaline or yellowish; seta elongate, upwards papillose; capsule small, inclined to pendent, ovoid to subclavate; peristome double; lid cupola-shaped, beak acicular; calyptra hood-shaped; tree-mosses of tropical regions.

(434′) **Rhaphidostichum.**** p. 105.

— Leaf-blade broadly ovate or elliptic or obovate, either abruptly short-subulate or terminated by a long, sinuous hair-point; stem-leaves not hypophylloid, larger than the branch-leaves; branches mostly horizontally spreading, densely foliose, openly pinnately or bipinnately disposed; leaf-cells prosenchymatic to narrow-linear, smooth or scantily papillose, basal cells mostly golden-yellow or reddish-brown; seta elongate, sinuous, smooth; capsule inclined to horizontal, ellipsoidal; lid cupola-shaped and blunt or conical and terminated by short or long beak; bark-mosses of tropical and subtropical regions.

(414′) *Section* **Tanythrix** of **Acanthocladium.**** p. 102.

496. Margin of leaves quite entire or obscurely denticulate near the leaf-tip; plant-mass pale yellowish-green, often with a silvery gloss; branches of unequal length, horizontally spreading; leaves ovate oblong, narrow-acuminate; leaf-cells prosenchymatic, smooth, alar cells oblong, large; seta long, smooth; capsule obconic; peristome double; lid cupola-shaped, beak long; a Siamese species.

(426′) *Section* **Microcalpe** *of* **Rhaphidorrhynchium.** p. 104.

— Margin of leaves upwards distinctly serrate; the longer branches usually very regularly pinnate; stem- and branch-leaves ± differentiated 497

497. Alar cells golden-yellow, some of them often subdivided into compartments by transverse walls, gradually pas-

sing into the much shorter, oblong, yellow inner basal cells, both alar and inner basal cells accompanied on their upper side by a horizontal row of oblong, hyaline cells, upper leaf-cells elongate-rhombic to linear; midrib entirely absent; seta 1—2 cm. long; capsule ± inclined, ellipsoidal; peristome double; lid conical, beak short or long; calyptra hood-shaped; mostly tree-mosses of temperate, subtropical and tropical regions.

(424′) **Brotherella.**** p. 103.

— The larger two or three alar cells oblong, nearly three times as long as broad, hyaline, basal cells chlorophyllose, upper leaf-cells elongate-rhombic; midribs 2, short; stem-leaves adpressed, obovate-trapezoidal, acuminate; branch-leaves lanceolate, shortly acuminate, upwards plicate; seta about 15 mm. in length; capsule horizontal, subcylindric; peristome double, endostome with a conspicuous basal membrane; lid low, conical, obtuse; a South-Indian genus.

Forcauella.** p. 104.

Addenda to Part No. 2 of Volume XIII.

(I) Rhacelopus and Rhacelopodopsis, the leaves of which bear no lamellae, can, in the absence of ripe capsules, be placed by their " polytrichoid " central column. (see Engler's Pflanzen-familien, vol. X, page 34, fig. 32).

(II) On page 27 make the following alterations—

100 Leaves lanceolate-subulate, upper ones much larger, etc.

— Leaves, lanceolate or lanceolate-linear, acuminate, apiculate or acute 100-A.

100A Margin of moist leaves turned up or inflexed, etc. (260) Trichostomum.

— Leaf-margins flat ; leaves sheathing at their base, lanceolate or lanceolate-linear ; leaf-cells of the sheath irregularly hexagonal or sublinear, upwards small and subquadrate, dorsally and ventrally papillose ; capsule cylindric ; peristome-teeth fenestrate, 2- to 3-fid.

(III) On page 97 alternative number 317, omit the words " branches erect, simple or furcate " and replace the number 318 on the margin by 317-A.

317A Leaves dimorphic : those of the main stem inserted with a broad base rapidly passing into a narrow-lanceolate, acute upper part ; leaves of the sterile branches and those of the lower part of the fertile branches, when dry, with involute points, when moist, squarrose, ovate-oblong or ovate-lanceolate, basal part plicate with rounded-quadrate cells ; upper leaves of the fertile branches in 5 rows, when dry spirally adpressed, when moist squarrose, broadly ovate to subordbicular ; seta, very short ; capsule elongate-ellipsoidal ; peristome wanting.

(49') **Desmotheca.** p. 64.

— Leaves all subsimilar 318

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